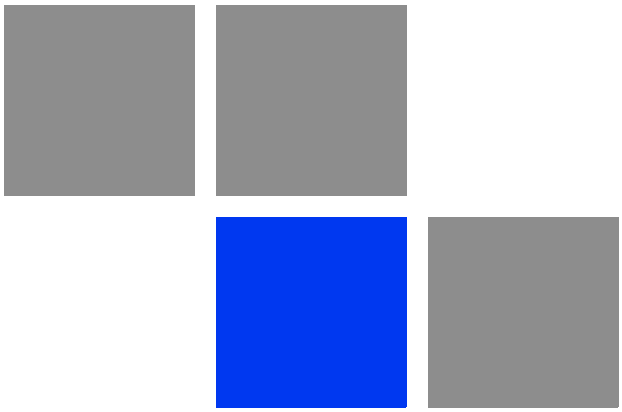
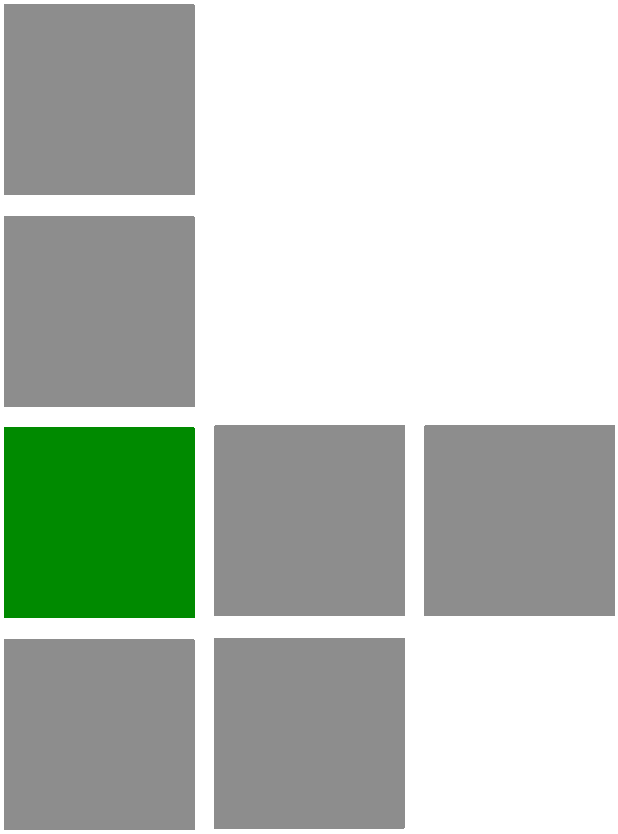


StarACS



User Manual

Software Version: 3.1
January 2011
P/N: 215761

Document History

Changed Item	Description	Date
This is the document's first publication.		January 2009
File Download Section 6.4.6	Revised	March 2009
Custom RPC Section 6.4.8	New feature	March 2009
Device Dependent Parameters Section 14	Revised	March 2009
Device Dependent Parameters Section 14	Revised	May 2009
CSR Section 12	New feature	May 2009
Device Dependent Parameters Section 14	Revised	June 2009
Oracle database	StarACS now runs on Oracle databases as well as MySQL	SW version 2.8 September 2009
User permission levels Section 4.5	When creating a new user, a permission level must be defined	SW version 2.8 September 2009
Updating a Group of CPEs Section 7	A filter capability has been added and it is now possible to specify time periods for the update	SW version 2.8 September 2009
Device Dependent Parameters Section 14	Revised	SW version 2.8 September 2009
Updating a Group of CPEs Section 7	Parameter tabs have been added to the Update Group window : ■ The Actions tab enables to manually configure commands for a group of CPEs. ■ The Device 'x' tab displays the list of CPEs.	SW version 2.8.5 November 2009

Changed Item	Description	Date
Licenses Section 4.10	A new menu option enabling to view the list of licenses and to add a new license has been added.	SW version 2.8.5 December 2009
Device Dependent Parameters Section 14.4	Parameters for BreezeMAX Si 4000 CPEs have been added.	SW version 3.0.5 May 2010
Configuring IIS to support BreezeMAX Si 4000 CPE Section 3	Before you can upload or download files to or from BreezeMAX Si 4000 CPEs it is necessary to configure the StarACS machine IIS server	SW version 3.0.5 May 2010
Monitoring Section 8	An event monitoring tab has been added to enable monitoring the state of the CPE and/or selected devices	SW version 3.0.5 May 2010
Alert Settings Section 4.4	An option has been added to send alerts as SNMP traps	SW version 3.0.5 May 2010
Device Info Section 6.4.1	Control option buttons have been added to enable the monitoring os the SOAP traffic between the CPE and StarACS	SW version 3.0.5 May 2010
Creating a New CPE Profile Section 5.3	A filter feature has been added to create filters based on information from Inform or User's information	SW version 3.0.5 May 2010
Device Dependent Parameters Section 14.6	Parameters for NG_VG device have been added.	SW version 3.1.3 December 2010
Device Dependent Parameters Section 14	Updated BreezeMAX Si 4000 CPE parameters.	SW version 3.1.3 December 2010
Trace CPE Section 6.2	Added new feature for tracing CPEs	SW Version 3.1.6 January 2011
Device Info Section 6.4.1	Added ping option to test the CPE's reachability Added Trace Route option to view the entire route (hops) to the CPE	SW Version 3.1.6 January 2011
Provision Manager Section 6.4.4	New list menu displaying all the parameters that are sent to the CPE for reprovisioning.	SW Version 3.1.6 January 2011
Events Chapter 9	New menu for handling events.	SW Version 3.1.6 January 2011

Changed Item	Description	Date
Whitelist Section 4.11	New list menu enabling to maintain a list of devices managed by the StarACS Management Console	SW Version 3.1.6 January 2011
ACS Settings Section 4.7	New list menu enabling to configure parameters relating to the connection between the ACS and the CPE	SW Version 3.1.6 January 2011

Legal Rights

© Copyright 2011 Alvarion Ltd. All rights reserved.

The material contained herein is proprietary, privileged, and confidential and owned by Alvarion or its third party licensors. No disclosure thereof shall be made to third parties without the express written permission of Alvarion Ltd.

Alvarion Ltd. reserves the right to alter the equipment specifications and descriptions in this publication without prior notice. No part of this publication shall be deemed to be part of any contract or warranty unless specifically incorporated by reference into such contract or warranty.

Trade Names

Alvarion®, BreezeCOM®, WALKair®, WALKnet®, BreezeNET®, BreezeACCESS®, BreezeLINK®, BreezeMAX®, BreezeLITE®, BreezePHONE®, 4Motion®, and/or other products and/or services referenced here in are either registered trademarks, trademarks or service marks of Alvarion Ltd.

All other names are or may be the trademarks of their respective owners.

“WiMAX Forum” is a registered trademark of the WiMAX Forum. “WiMAX,” the WiMAX Forum logo, “WiMAX Forum Certified,” and the WiMAX Forum Certified logo are trademarks of the WiMAX Forum.

Statement of Conditions

The information contained in this manual is subject to change without notice. Alvarion Ltd. shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual or equipment supplied with it.

Warranties and Disclaimers

All Alvarion Ltd. (“Alvarion”) products purchased from Alvarion or through any of Alvarion's authorized resellers are subject to the following warranty and product liability terms and conditions.

Exclusive Warranty

(a) Alvarion warrants that the Product hardware it supplies and the tangible media on which any software is installed, under normal use and conditions, will be free from significant defects in materials and workmanship for a period of fourteen (14) months from the date of shipment of a given Product to Purchaser (the “Warranty Period”). Alvarion will, at its sole option and as Purchaser's sole remedy, repair or replace any defective Product in accordance with Alvarion' standard R&R procedure.

(b) With respect to the Firmware, Alvarion warrants the correct functionality according to the attached documentation, for a period of fourteen (14) month from invoice date (the “Warranty Period”)”. During the Warranty Period, Alvarion may release to its Customers firmware updates, which include additional performance improvements and/or bug fixes, upon availability (the “Warranty”). Bug fixes, temporary patches and/or workarounds may be supplied as Firmware updates.

Additional hardware, if required, to install or use Firmware updates must be purchased by the Customer. Alvarion will be obligated to support solely the two (2) most recent Software major releases.

ALVARION SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY PURCHASER'S OR ANY THIRD PERSON'S MISUSE, NEGLIGENCE, IMPROPER INSTALLATION OR IMPROPER TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING OR OTHER HAZARD.

Disclaimer

(a) The Software is sold on an “AS IS” basis. Alvarion, its affiliates or its licensors MAKE NO WARRANTIES, WHATSOEVER, WHETHER EXPRESS OR IMPLIED, WITH RESPECT TO THE SOFTWARE AND THE ACCOMPANYING DOCUMENTATION. ALVARION SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT WITH RESPECT TO THE SOFTWARE. UNITS OF PRODUCT (INCLUDING ALL THE SOFTWARE) DELIVERED TO PURCHASER HEREUNDER ARE NOT FAULT-TOLERANT AND ARE NOT DESIGNED, MANUFACTURED OR INTENDED FOR USE OR RESALE IN APPLICATIONS WHERE THE FAILURE, MALFUNCTION OR INACCURACY OF PRODUCTS CARRIES A RISK OF DEATH OR BODILY INJURY OR SEVERE PHYSICAL OR ENVIRONMENTAL DAMAGE (“HIGH RISK ACTIVITIES”). HIGH RISK ACTIVITIES MAY INCLUDE, BUT ARE NOT LIMITED TO, USE AS PART OF ON-LINE CONTROL SYSTEMS IN HAZARDOUS ENVIRONMENTS REQUIRING FAIL-SAFE PERFORMANCE, SUCH AS IN THE OPERATION OF NUCLEAR FACILITIES, AIRCRAFT NAVIGATION OR COMMUNICATION SYSTEMS, AIR TRAFFIC CONTROL, LIFE SUPPORT MACHINES, WEAPONS SYSTEMS OR OTHER APPLICATIONS REPRESENTING A SIMILAR DEGREE OF POTENTIAL HAZARD. ALVARION SPECIFICALLY DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR HIGH RISK ACTIVITIES.

(b) PURCHASER'S SOLE REMEDY FOR BREACH OF THE EXPRESS WARRANTIES ABOVE SHALL BE REPLACEMENT OR REFUND OF THE PURCHASE PRICE AS SPECIFIED ABOVE, AT ALVARION'S OPTION. TO THE

FULLEST EXTENT ALLOWED BY LAW, THE WARRANTIES AND REMEDIES SET FORTH IN THIS AGREEMENT ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO WARRANTIES, TERMS OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, SATISFACTORY QUALITY, CORRESPONDENCE WITH DESCRIPTION, NON-INFRINGEMENT, AND ACCURACY OF INFORMATION GENERATED. ALL OF WHICH ARE EXPRESSLY DISCLAIMED. ALVARION' WARRANTIES HEREIN RUN ONLY TO PURCHASER, AND ARE NOT EXTENDED TO ANY THIRD PARTIES. ALVARION NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS.

Limitation of Liability

(a) ALVARION SHALL NOT BE LIABLE TO THE PURCHASER OR TO ANY THIRD PARTY, FOR ANY LOSS OF PROFITS, LOSS OF USE, INTERRUPTION OF BUSINESS OR FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER ARISING UNDER BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE AND WHETHER BASED ON THIS AGREEMENT OR OTHERWISE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

(b) TO THE EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL THE LIABILITY FOR DAMAGES HEREUNDER OF ALVARION OR ITS EMPLOYEES OR AGENTS EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCT BY PURCHASER, NOR SHALL THE AGGREGATE LIABILITY FOR DAMAGES TO ALL PARTIES REGARDING ANY PRODUCT EXCEED THE PURCHASE PRICE PAID FOR THAT PRODUCT BY THAT PARTY (EXCEPT IN THE CASE OF A BREACH OF A PARTY'S CONFIDENTIALITY OBLIGATIONS).

Important Notice

This user manual is delivered subject to the following conditions and restrictions:

- This manual contains proprietary information belonging to Alvarion Ltd. Such information is supplied solely for the purpose of assisting properly authorized users of the respective Alvarion products.
- No part of its contents may be used for any other purpose, disclosed to any person or firm or reproduced by any means, electronic and mechanical, without the express prior written permission of Alvarion Ltd.
- The text and graphics are for the purpose of illustration and reference only. The specifications on which they are based are subject to change without notice.
- The software described in this document is furnished under a license. The software may be used or copied only in accordance with the terms of that license.
- Information in this document is subject to change without notice. Corporate and individual names and data used in examples herein are fictitious unless otherwise noted.
- Alvarion Ltd. reserves the right to alter the equipment specifications and descriptions in this publication without prior notice. No part of this publication shall be deemed to be part of any contract or warranty unless specifically incorporated by reference into such contract or warranty.
- The information contained herein is merely descriptive in nature, and does not constitute an offer for the sale of the product described herein.
- Any changes or modifications of equipment, including opening of the equipment not expressly approved by Alvarion Ltd. will void equipment warranty and any repair thereafter shall be charged for. It could also void the user's authority to operate the equipment.

Contents

1. StarACS Overview 1
2. Installation 3
2.1 Prerequisites 3
2.1.1 Prerequisites for Oracle Installation 3
2.2 Installing StarACS 4
3. Getting Started 12
3.1 Login 12
3.2 The Main Window 13
4. Defining StarACS Settings 15
4.1 Defining ACS and DB Settings 15
4.2 Email Server Settings 17
4.3 SNMP Server Settings 18
4.4 Alerts Settings 20
4.5 User Management Settings 21
4.6 ACS (CPE) Users Settings 24
4.7 ACS Settings 26
4.8 File Server Settings 27
4.9 Sessions 29
4.10 Licenses 30
4.11 Whitelist 32
5. Defining a CPE Profile 35
5.1 Viewing and Managing CPE Profiles 35

5.1.1 Default Profile 39
5.2 Importing CPE Profiles 39
5.3 Creating a New CPE Profile 40
5.4 Fast Provisioning of a New CPE 43
6. Updating a CPE 44
6.1 Searching CPEs 44
6.2 Viewing CPE List 46
6.3 Device Table Actions 50
6.4 List Menu Options 52
6.4.1 Device Info 52
6.4.2 Device Settings 54
6.4.3 Advanced View 56
6.4.4 Provision Manager 58
6.4.5 Device Monitoring 59
6.4.6 File Download 61
6.4.7 File Upload 65
6.4.8 Custom RPC 68
6.4.9 Device History 69
6.4.10 Device Activity 70
6.4.11 Pending, Completed, Rejected, and Failed Tasks 71
7. Updating a Group of CPEs 74
7.1 Viewing CPE Groups 74
7.2 Importing a File for Updating a Group 79
7.3 Creating a New CPE Group 80
7.4 Defining a Filter Group 83

8. Monitoring 87
8.1 Viewing Events 87
8.2 Importing an Event Monitoring File 92
8.3 Creating a New Event 94
8.4 Viewing an Event Log 96
9. Events 98
9.1 Viewing Events 98
9.2 Importing an Event File 102
9.3 Creating a New Event 104
10. Reports 107
10.1 CPE Distribution Report 108
10.2 CPE Registration Report 110
10.3 Pending Tasks Report 111
10.4 Rejected Tasks Report 113
10.5 Activity 113
10.5.1 Profiles Activity Report 114
10.5.2 Update a CPE Activity Report 116
10.5.3 Update Group Activity Report 117
10.5.4 System Activity Report 119
10.6 Updates Report 120
11. File Management 123
11.1 File Management 123
11.2 Adding a File to the File Server 124
12. CSR 127
12.1 Configuration 127
12.2 User Management 129
12.2.1 Admin Access Level 130

12.2.2 Csr Access Level 131
12.2.3 User Access Level 131
13. Default Profile Parameters 132
14. Device Dependent Configuration 134
14.1 BreezeMAX 1000 CPEs 134
14.1.1 File Transfer Configurations 134
14.1.2 List of Parameters 135
14.1.3 Inform Parameters 158
14.2 BreezeMAX 2000 CPEs 160
14.2.1 File Transfer Configurations 160
14.2.2 List of Parameters 161
14.2.3 Inform Parameters 176
14.3 BreezeMAX 3000 CPEs 177
14.3.1 File Transfer Configurations 177
14.3.2 List of Parameters 178
14.3.3 Inform Parameters 195
14.4 BreezeMAX Si 4000 CPEs 196
14.4.1 File Transfer Configurations 196
14.4.2 List of Parameters 197
14.4.3 Inform Parameters 252
14.5 BreezeMAX 5000 CPE 253
14.5.1 File Transfer Configurations 253
14.5.2 List of Parameters 254
14.5.3 Inform Parameters 276
14.6 NG_VG 277
14.6.1 File Transfer Configurations 277

14.6.2 List of Parameters 277
14.6.3 Inform Parameters 301
Glossary 302

1. StarACS Overview

This document describes using the StarACS Admin CPE Remote Management application. This product enables the administrator to manage, monitor, and diagnose customer premises equipment (CPE) complying with the TR-069 protocol.

Alvarion's StarACS is a carrier-class ACS (Auto Configuration Server) management system designed for managing WiMAX CPEs (Customer Premises Equipment) over TR-069 protocol.

Built on an industry proven Application Server architecture, the StarACS is scalable, allowing it to support a virtually unlimited number of CPE devices.

Alvarion's StarACS standards-based solution is designed to centralize and simplify the management, provisioning, monitoring, and delivery of broadband services to CPE.

StarACS Value Proposition:

- Reduces cost of provisioning new subscribers.
- Reduces cost of provisioning new services to subscribers.
- Reduces on-going maintenance support cost.

The StarACS provides comprehensive management support for the entire CPE service life cycle, including Zero-Touch installation, provisioning, software upgrades, configuration backups, and on line support for customer support representatives.

Main features:

- Zero-touch provisioning
- Activating/Deactivating a service
- Diagnosing and configuring CPEs
- Managing and updating the firmware
- Uploading files from the CPE
- Verifying the CPE's connectivity status

- Resetting/Rebooting the CPE
- Displaying the CPE's activity log
- Monitoring CPEs

The StarACS Management application is accessed through a web browser. The web interface consists of the following sections:

- Default Profile - a default generic provisioning profile for all unknown/unmanaged CPEs
- CPE Profile - a default provisioning profile for a specific CPE model
- Update a CPE - to manage a specific CPE
- Update Group - to manage groups of CPEs
- Monitoring - to monitor events that show the state of the CPE and/or selected parameters
- Reports - to track and monitor CPE and system activity
- File Management - to manage firmware image and vendor configuration files
- Settings - for initial setup of the system

2. Installation

2.1 Prerequisites

Before installing the StarACS, verify that the following software is installed:

- Newly installed, dedicated Windows 2008 Server
- Remote or Local (ACS Server) Database.
  The following databases are supported:
  - » MySQL V5.1 (latest release)
  - » Oracle 10g

NOTE

When installing StarACS with the Oracle server on a separate machine, the Oracle client must be installed on the StarACS machine. The Oracle client version must be the same as the Oracle server version.

- IIS 5.0 or above
- .NET Framework 2.0
- FTP and TFTP servers - can be either a single server supplying both (e.g. 3cDaemon-http://support.3com.com/software/utilities_for_windows_32_bit.htm) or separate FTP server (e.g. FileZilla - http://filezilla-project.org) and TFTP server (e.g. pumpkin - http://kin.klever.net/pumpkin/binaries)
- HTTP File Server - is configured using the operating system IIS
- H/W capacity and requirements according to the release notes

2.1.1 Prerequisites for Oracle Installation

Before StarACS can be activated with an Oracle database, it is necessary to manually create the database and run the schema/users scripts.

To create Oracle database, users and import schema:

1 Manually create an empty database on the Oracle server.

2 Copy the Oracle scripts (the createFriendlyDB.sql file and the acs, admin, csr, and dps folders) from the Setup folder in the StarACS kit to the Oracle server.

3 Open a command prompt and locate the folder where the scripts were copied.

- In the command prompt located in the script folder, run the command: `sqlplus system/password@dbname` where "password" and "dbname" must be filled with the proper information. The SQL prompt is displayed.
- At the SQL prompt, run the command `@createFriendlyDB.sql`. Accept the default options for the prompted tablespace location or change to a specific place on the disk. The user and schema creation begins, at the end of which a successful message is displayed.

2.2 Installing StarACS

It is recommended that you close any running applications on the computer. The installation should be run by a user with administrator privileges.

To install StarACS:

1 Double-click the **setup.exe** file on the installation CD. The system automatically detects whether the following applications are installed:

- JDK 1.5 – Java Development Kit
- MySQL Connector – required for connection to a MySQL database

If the applications are not installed Figure 1 is displayed.

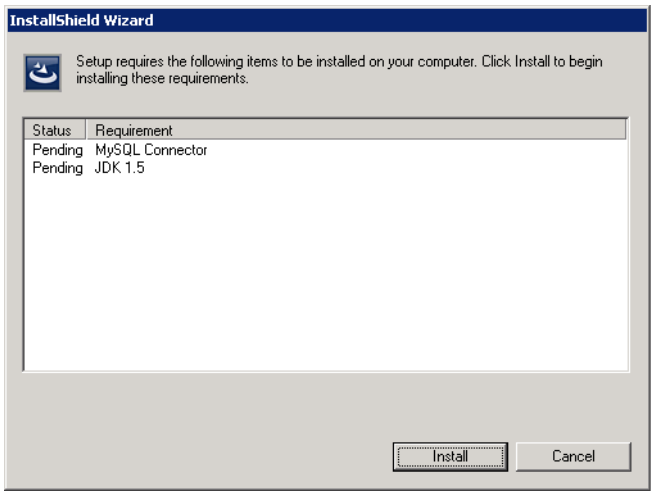


Figure 1: Additional Application Required

2 Click **Install** to begin installing the required applications. Figure 2 is displayed.

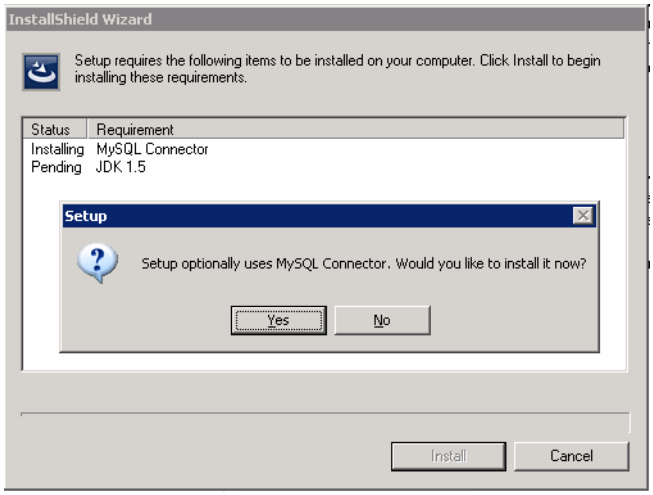


Figure 2: Installing additional applications

Click **Yes** if installing on a MySQL database or click **No** if installing on Oracle. Figure 3 is displayed.

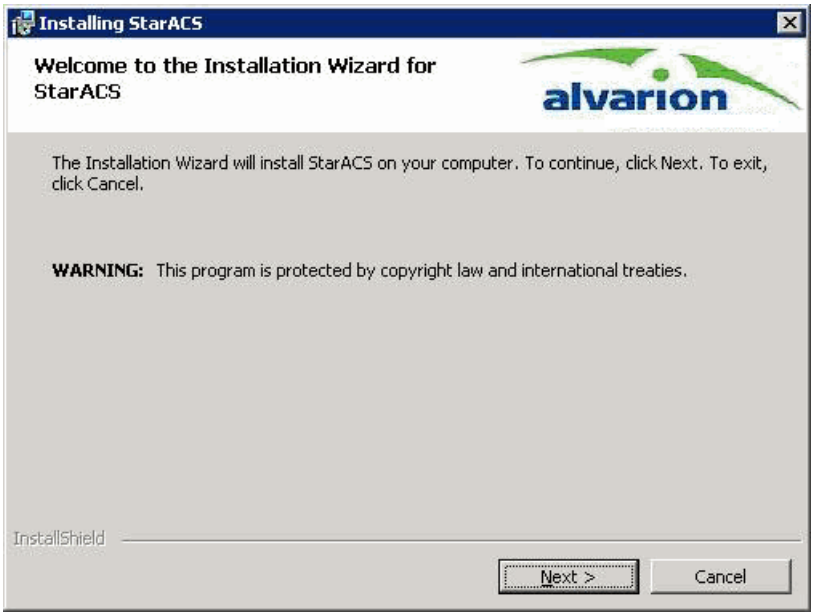

Installing StarACS
Welcome to the Installation Wizard for StarACS
alvarion
The Installation Wizard will install StarACS on your computer. To continue, click Next. To exit, click Cancel.
WARNING: This program is protected by copyright law and international treaties.
InstallShield
Next >
Cancel

Figure 3: Installation Wizard

3 Click **Next**. The *License Agreement Window* is displayed.

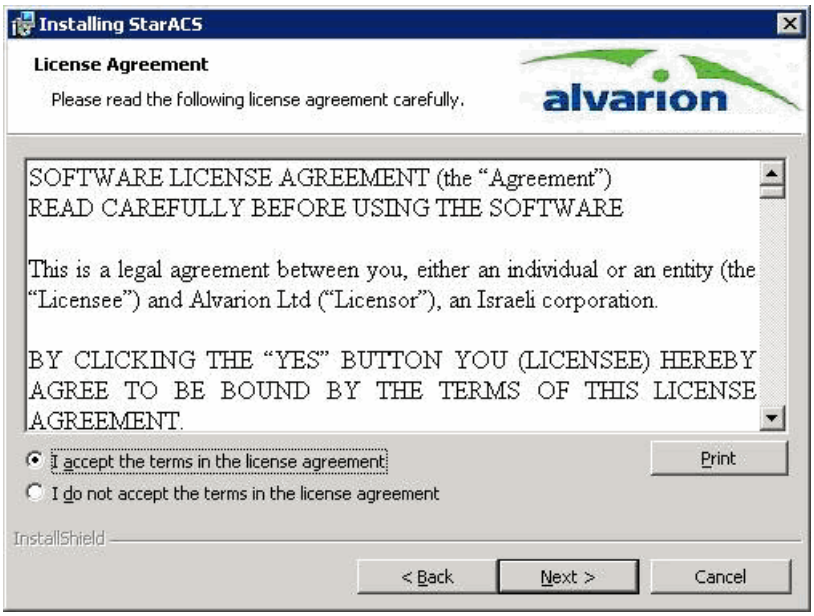

Installing StarACS
License Agreement
Please read the following license agreement carefully.
alvarion
SOFTWARE LICENSE AGREEMENT (the "Agreement")
READ CAREFULLY BEFORE USING THE SOFTWARE
This is a legal agreement between you, either an individual or an entity (the "Licensee") and Alvarion Ltd ("Licensor"), an Israeli corporation.
BY CLICKING THE "YES" BUTTON YOU (LICENSEE) HEREBY AGREE TO BE BOUND BY THE TERMS OF THIS LICENSE AGREEMENT.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

Figure 4: License Agreement Window

4 Accept the terms of the License Agreement and click **Next**. T*he Destination Folder Window* is displayed.

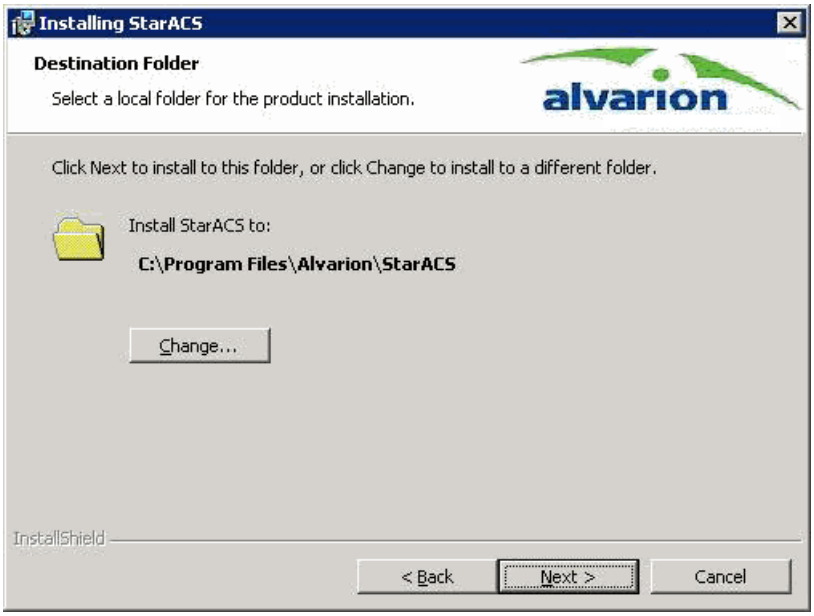


Figure 5: Destination Folder Window

5 Click **Next** to accept the default folder or click **Change** to select another folder. The *Database Configuration Window* is displayed.

6 Select the type of Database Server:

a If MySQL is selected (Figure 6), enter the Database Connection options: Server URL, Server Port, User Name, and Password. Click **Next**.

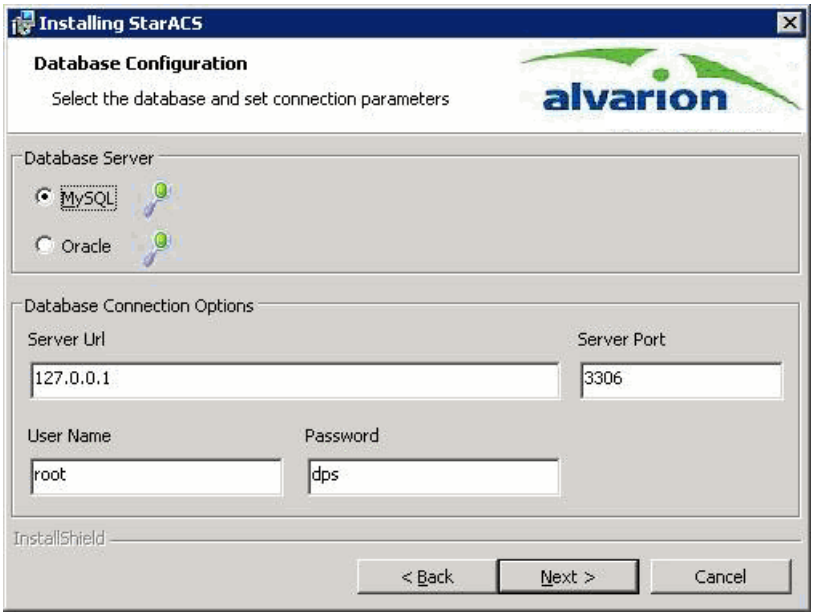


Figure 6: Database Configuration Window- MySQL

b If Oracle is selected (Figure 7), enter the Database Connection options: Server URL, Server Port, User Name, Password and Service Name. Click **Next**.

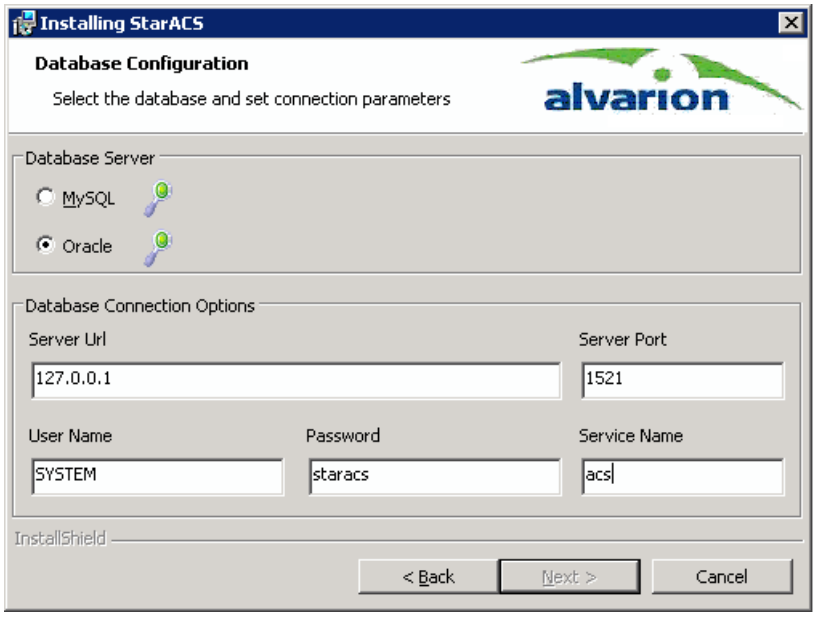


Figure 7: Database Configuration Window- Oracle

Figure 8 is displayed.

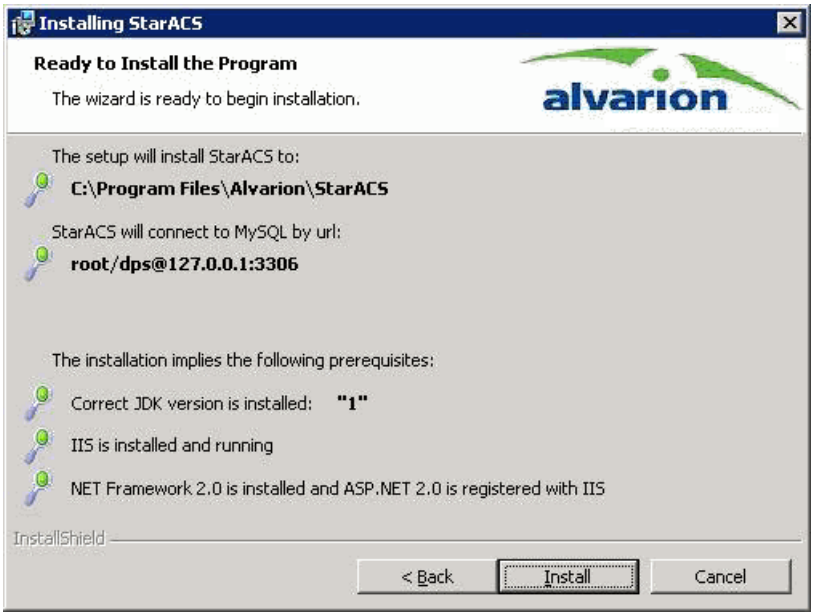

Installing StarACS
Ready to Install the Program
The wizard is ready to begin installation.
alvarion
The setup will install StarACS to:
C:\Program Files\Alvarion\StarACS
StarACS will connect to MySQL by url:
root/dps@127.0.0.1:3306
The installation implies the following prerequisites:
Correct JDK version is installed: "1"
IIS is installed and running
NET Framework 2.0 is installed and ASP.NET 2.0 is registered with IIS
InstallShield
< Back
Install
Cancel

Figure 8: Ready to Install

7 Verify the following information on the screen:

- Destination Folder location
- Database Connection parameters
- JDK 1.5 is installed and pointing to the correct path
- IIS is installed and running
- .NET Framework 2.0 is installed and registered to IIS

To proceed with the installation, click **Install**. To change settings or make corrections, click **Back**.

The *Installing StarACS Window* is displayed.

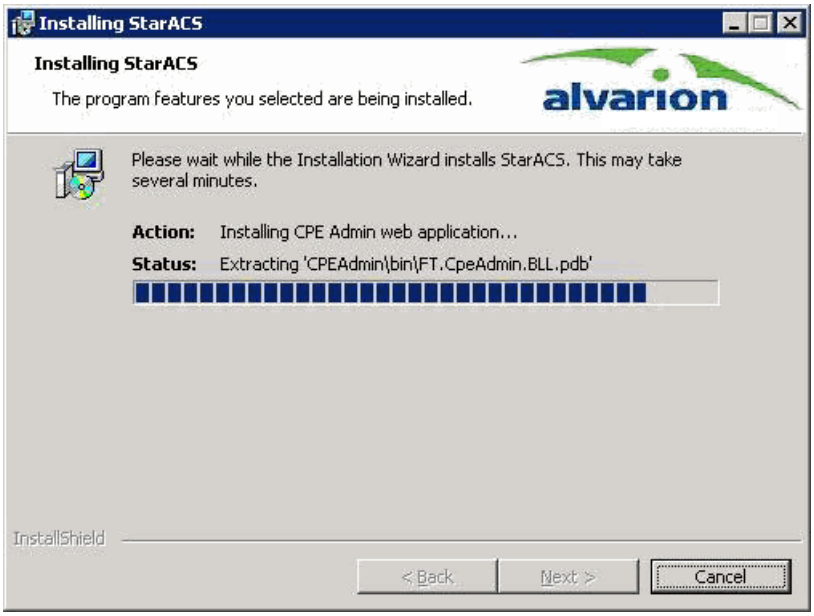

Installing StarACS
Installing StarACS
The program features you selected are being installed.
alvarion
Please wait while the Installation Wizard installs StarACS. This may take several minutes.
Action: Installing CPE Admin web application...
Status: Extracting 'CPEAdmin\bin\FT.CpeAdmin.BLL.pdb'
InstallShield
< Back
Next >
Cancel

Figure 9: Installing StarACS Window

8 The installation process takes several minutes. Once StarACS has been successfully installed Figure 10 is displayed.

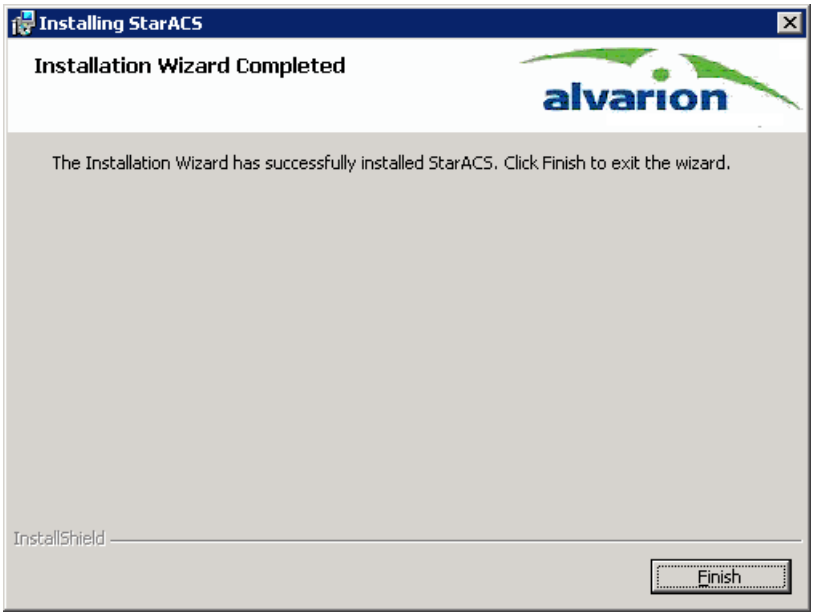


Figure 10: Installation Wizard Completed

9 For installations on Oracle servers **ONLY**, configure the connection to the database:

a In the folder *C:\Program Files\Alvarion\StarACS\ACS\server\dps\deploy* open the file oracle-ds.xml. Change the IP address to the actual IP address (not 127.0.0.1 or loop-back), the Port and the SID to the correct values for the Oracle server. These parameters appear in three different places in the file, enclosed by the <connection-url> tags.

b In the folder *C:\Inetpub\wwwroot\StarACS\XML* open the file ConnectionStrings.xml. Change the database type to Oracle(<DBType>Oracle</DBType>) and change the values for the IP, Port and SID inside the tags <Oracle>).

c Copy the ojdbc14.jar file from the Oracle installation to the *C:\Program Files\Alvarion StarACS\ACS\server\dps\lib* folder, overwriting the existing file. (For example: The ojdbc14.jar file can be found in the folder *D:\Oracle\product\10.1.0\Client_1\jdbc\lib).*

10 Click **Finish** to exit the installation wizard.

StarACS is installed as an automatic Windows service and can be managed from Service Manager.

IMPORTANT

- When uninstalling the application the service must be first stopped.
- When uninstalling, some operations may need to be completed manually:
  - » Remove the Alvarion directory under program files
  - » Remove all the staracs entries from the windows registry

3. Getting Started

3.1 Login

To log in to the StarACS application for the first time, the user must have administrator permission. The default user name is admin, and the default password is admin. This default cannot be changed during the installation.

To start StarACS:

1 In the web browser, enter the link to the StarACS home page (http://<ACS ip address>/StarACS/Default.aspx) and press Enter. The login window is displayed.

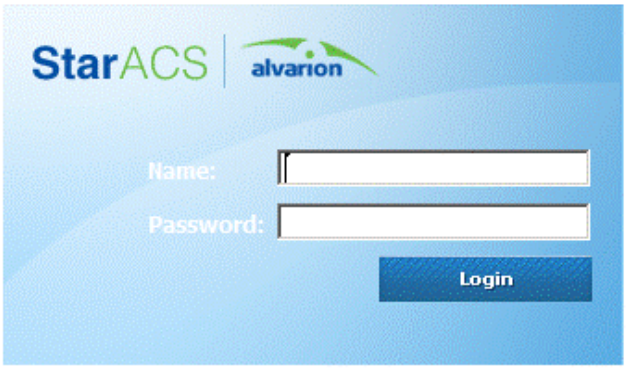


Figure 11: Login Window

2 Enter the administrator user name and password (default name and password: admin/admin) and press Enter or click Login. The StarACS Update a CPE page is displayed.

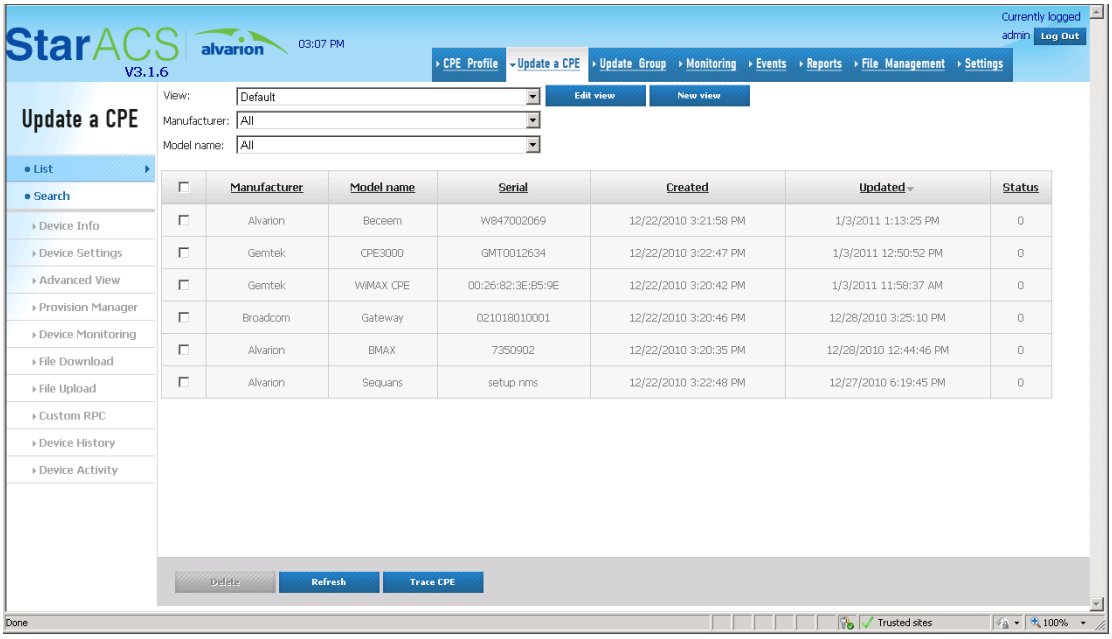


Figure 12: StarACS Main Window

3.2 The Main Window

The StarACS user interface consists of four main areas:

- Main tabs: Select the preferred administration functionality
- Menu per tab: An options menu per each tab
- Main screen area: The main data area
- Buttons per screen: Action buttons per each screen

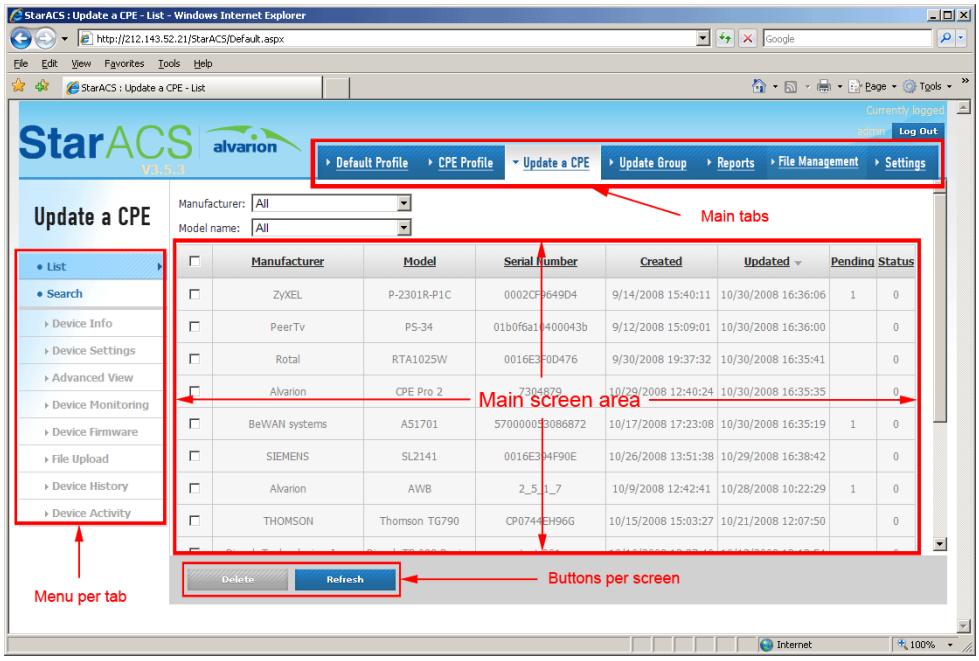


Figure 13: Main Window

4. Defining StarACS Settings

Before you can use the StarACS for managing CPEs, you need to define initial settings, such as server details, allowed users, etc.

The following sections describe the Settings tab and its menu options:

- "Defining ACS and DB Settings" on page 15
- "Email Server Settings" on page 17
- "SNMP Server Settings" on page 18
- "Alerts Settings" on page 20
- "User Management Settings" on page 21
- "ACS (CPE) Users Settings" on page 24
- "ACS Settings" on page 26
- "File Server Settings" on page 27
- "Sessions" on page 29
- "Licenses" on page 30
- "Whitelist" on page 32

4.1 Defining ACS and DB Settings

The ACS and DB menu option enables setting system parameters for the ACS and database servers. These settings should only be changed if ACS is installed in distributed architecture.

To define ACS and DB settings:

1 Click the ACS and DB menu option.

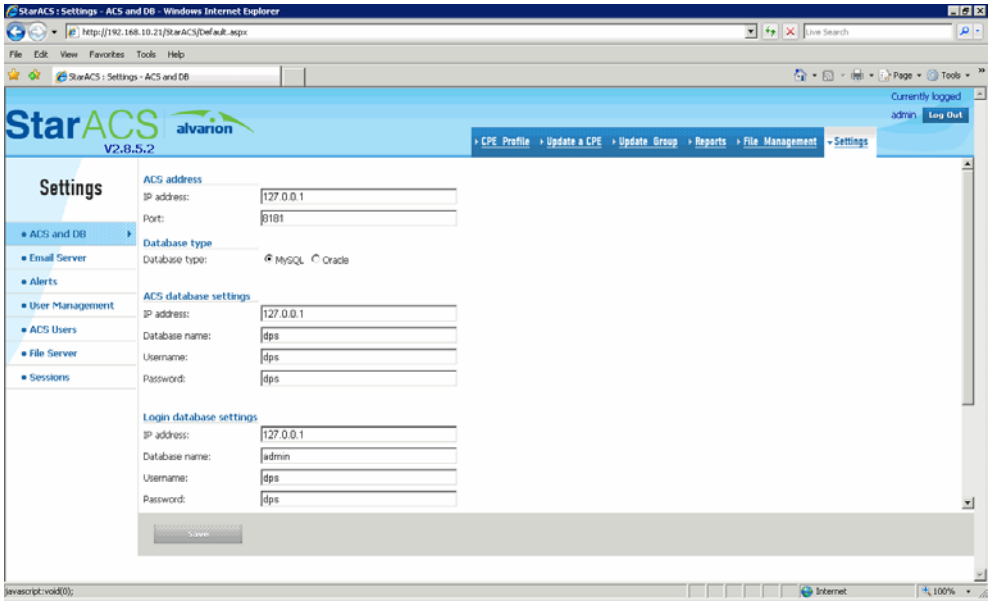


Figure 14: ACS and DB Window

2 Modify the following parameters as required:

Table 1: ACS and DB Settings

Parameter	Description
ACS address:	
IP address	ACS IP address
Port	ACS port number. **Note:** In order to be able to change the port, it is necessary to also change the port on the ACS server. Contact Alvarion Customer Support for configuration details.
Database type:	
Database type	The database type. The possible values are MySQL or Oracle.
ACS database settings:	
IP address	ACS database server's IP address
Database name	ACS database name
Username	ACS database username
Password	ACS database password
Login database settings:	
IP address	Login database server IP address

Table 1: ACS and DB Settings

Parameter	Description
Database name	Login database name
Username	Login database username
Password	Login database password
Database ACS users:	
IP address	ACS users database server's IP address
Database name	ACS users database name
Username	ACS users database username
Password	ACS users database password

3 Click Save to save your settings.

4.2 Email Server Settings

You can define an SMTP Server address for sending alerts to inform the operator about system events (e.g., database or server down).

To define Email server settings:

1 Click the Email Server menu option to enable setting system parameters for the email server.

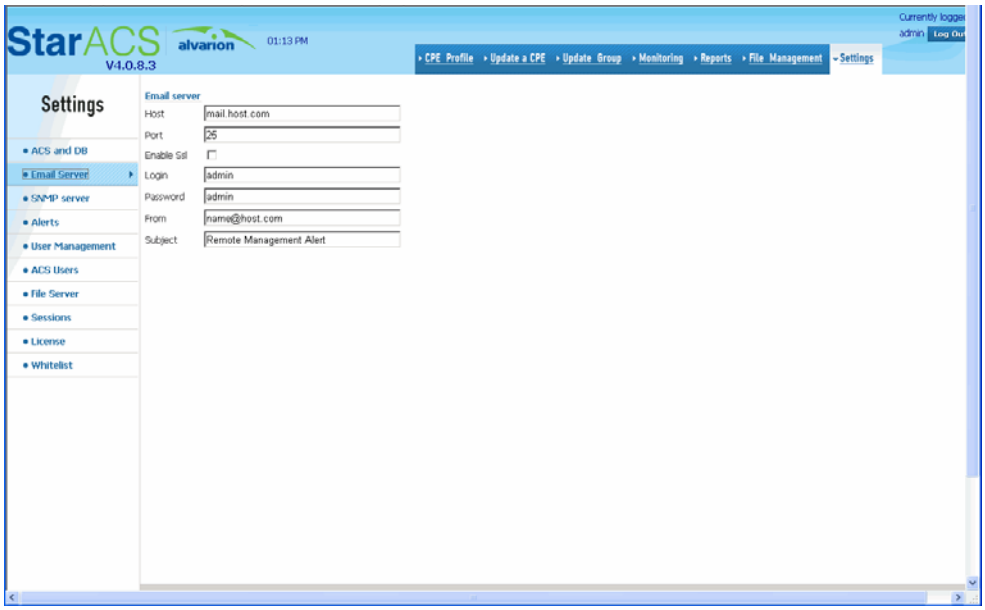


Figure 15: E-mail Server Window

2 Set the following fields as required:

Table 2: E-mail Server Settings

Parameter	Description
Host	email server host name
Port	email server port number
Enable SSL	check box to enable or disable SSL
Login	email server username
Password	email server password
From	email address used to send alerts
Subject	text used as the subject line in email alerts

3 Click Save to save your settings.

4.3 SNMP Server Settings

Alerts configured to be triggered by loss of connectivity of the ACS or database servers can be sent as an SNMP trap.

To enable sending alerts as SNMP trap:

- In the Alerts window (Figure 17), check the Enable SNMP alerts box.

To configure the SNMP server:

1 Click the SNMP Server menu option.

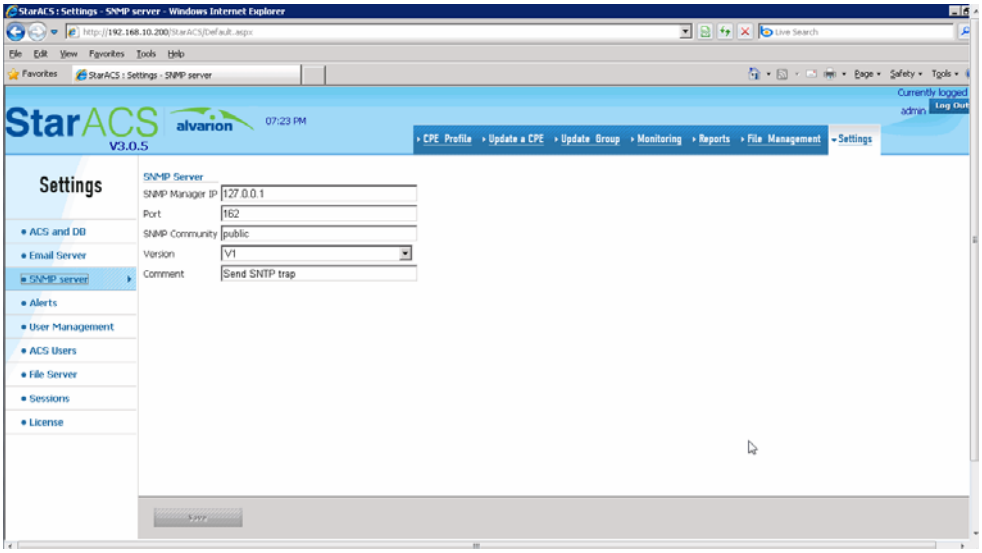


Figure 16: SNMP Server Window

2 Modify the following fields as required:

Field	Description
SNMP Manager IP	The IP address of the SNMP server to which the trap is sent
Port	The SNMP Server port
SNMP Community	The name of SNMP Community
Version	The SNMP version
Comment	The comment displayed

3 Click Save to save your settings.

4.4 Alerts Settings

Alerts can be configured to be triggered by loss of connectivity of the ACS or database servers.

To define Alerts settings:

1 Click the Alerts menu option to enable configuring alerts.

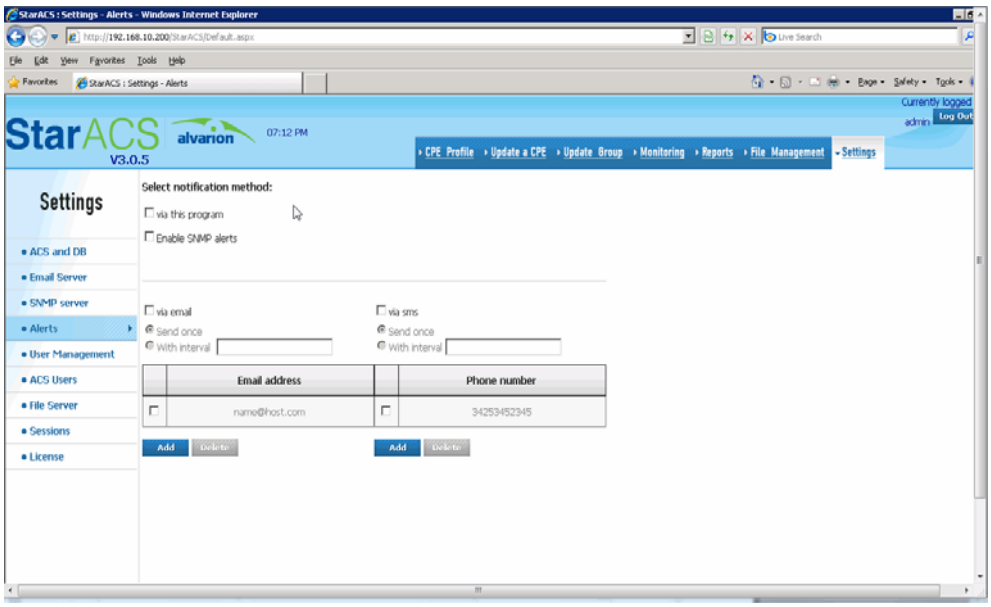


Figure 17: Alerts Window

2 Select the notification method. The possible options are: via this program, Enable SNMP alerts, via email, or via sms. You can select more than one option, or all.

» If you select via e-mail or via sms, choose whether to send once, or to send periodically. To send periodically, enter the periodic interval in seconds.

» If you select via e-mail, click the Add button and enter the e-mail address to receive the alert message. The e-mails will be sent via the SMTP Server that was configured previously (see Section 4.2).

» If you select via sms, click the Add button and enter the telephone number to receive the alert message. This feature requires an external SMS service.

3 Enter a valid email address or phone number and click Save to add users to the list. Alert notification will be sent to all email addresses and phone numbers in the list.

NOTE

If you select an email address or telephone number from the lists that appear on the screen, the **Delete** button is activated. Click **Delete** to remove the selected item from the list.

4.5 User Management Settings

This page allows managing the users of the StarACS application.

Click the User Management menu option to display a table of users.

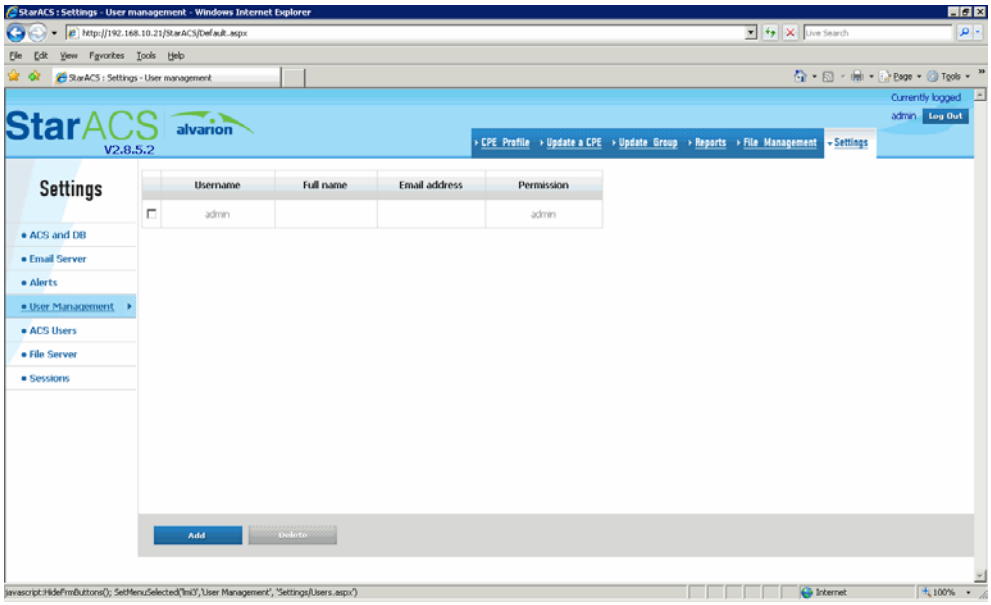


Figure 18: User Management Window

The table displays the following fields:

- Username
- Full name
- E-mail address
- Permission

The following controls are available:

- Add - creates a new user
- Delete - removes a user

To create a new user:

1 Click Add. The following page is displayed:

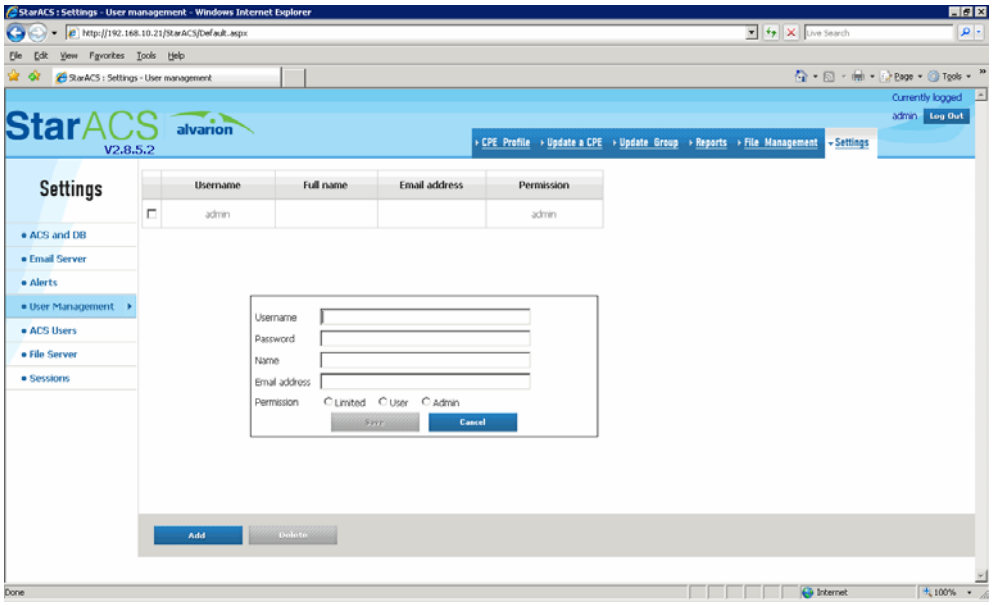


Figure 19: Adding New User

2 Enter the Username and Password for the new user.

3 Enter the user's Name and Email address.

4 Check a permission level for the user.

» Limited - users have Read Only rights on one CPE and cannot perform operations on more CPEs at the same time. The CPE Profile, Update Group, Reports, File Management and Settings menus are not available.

» User - users have Read/Write access on one CPE and cannot perform operations on more CPEs at the same time. The CPE Profile, Update Group, Reports, File Management and Settings menus are not available.

» Admin - users have full rights.

5 Click Save. The new user is added to the user table.

To edit a user:

1 Click on the table row of the user entry to be edited. The following page is displayed:

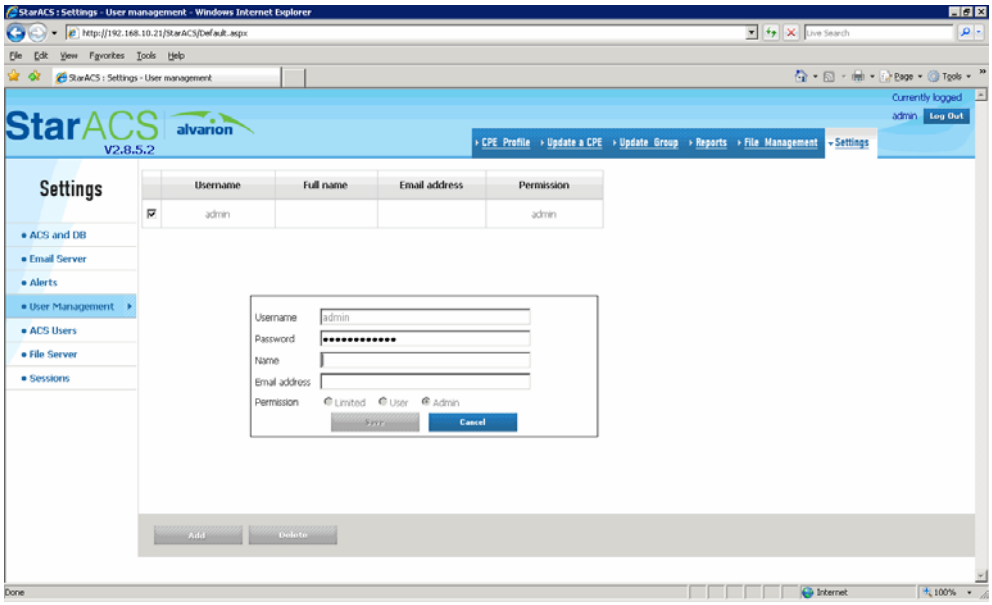


Figure 20: Editing User

2 Modify the desired fields.

3 Click Save. The user entry is modified in the user table.

To delete a user:

1 Check the box in the table row of the user entry to be edited.

2 Click Delete. A confirmation window appears.

3 Click OK. The user is deleted.

4.6 ACS (CPE) Users Settings

ACS Users is a white list of entries used to identify CPEs connected to ACS. Each CPE is assigned a “user” name and password that the management system identifies and matches to the database. Only upon identification the communication with the specific CPE is allowed. It is only necessary to define ACS Users if an authentication method is required between the CPE and ACS. If not, the default users that come with the installation are enough to support communication, but they must not be deleted.

Click the ACS Users menu option to enable adding or deleting ACS users.

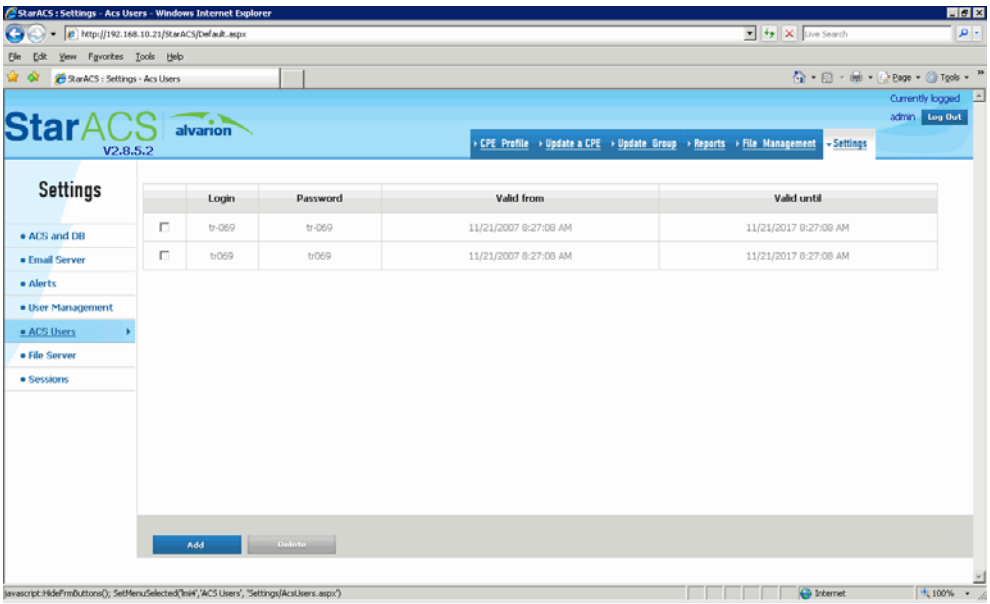


Figure 21: ACS Users

The following fields are displayed in the ACS user table:

- Login - ACS user name

- Password - ACS user password
- Valid from - ACS user start effective date and time
- Valid until - ACS user end effective date and time

To create a new ACS user:

1 Click Add. The following page is displayed:

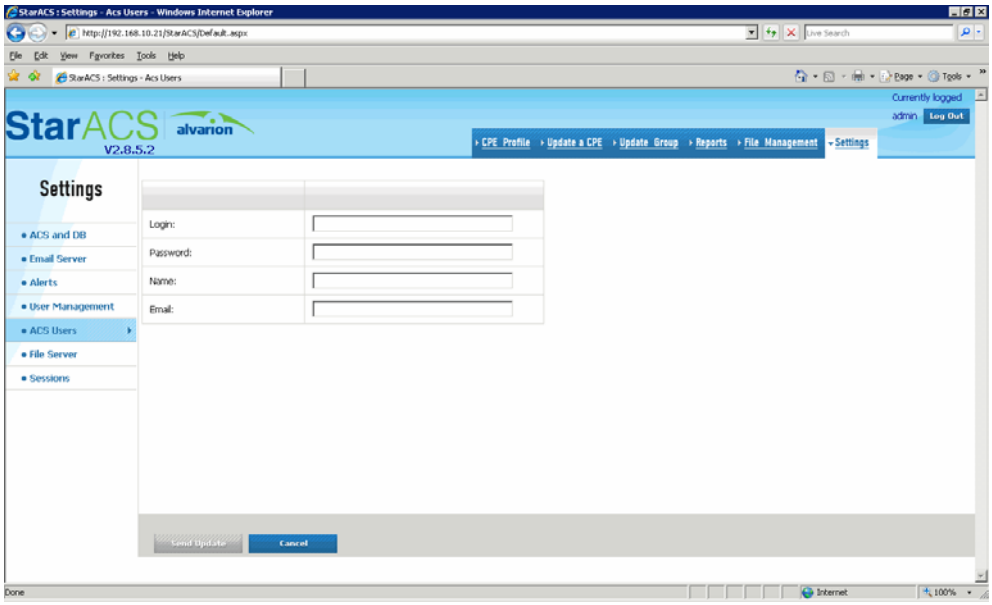


Figure 22: New ACS User

2 Enter the Login and Password for the new user.

3 Enter the user's Name and Email.

4 Click Send Update. The new ACS user is added to the ACS user table.

To edit an ACS user:

1 Click on the table row of the user entry to be edited.

2 Modify the desired fields.

3 Click Send Update. The user entry is modified in the user table.

To delete an ACS user:

1 Check the box in the table row of the ACS user entry to be edited.

2 Click Delete. A confirmation window appears.

3 Click OK. The ACS user is deleted.

4.7 ACS Settings

The ACS Settings window enables to configure parameters relating to the connection between the ACS and the CPE.

To define ACS settings:

1 Click the ACS Settings menu option to enable ACS settings configuration.

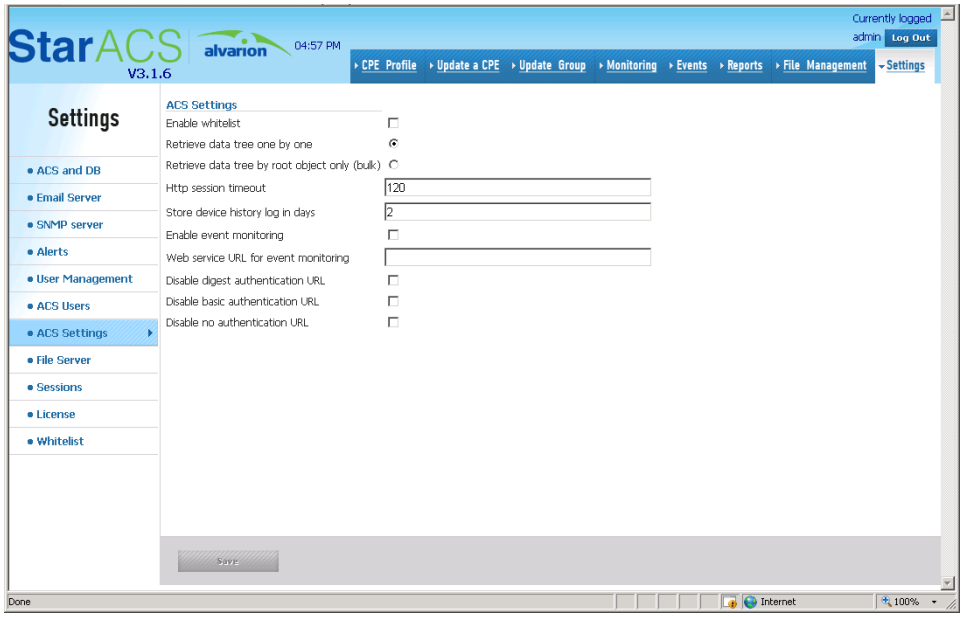


Figure 23: ACS Settings

2 Modify the following fields as required:

Field	Description
Enable whitelist	Check to enable whitelist or uncheck to disable. When enabled, only the devices listed in the whitelist will be able to register to the ACS. See Section 4.11.
Retrieve data tree	Select one of the following discovery mode options: ■ one by one ■ by root object only (bulk)
HTTP session timeout	The timeout (in seconds) of the HTTP session between the ACS and the CPE.
Store device history log in days	Sets the number of days during which the devices' history log is stored.
Enable event monitoring	Check to enable transmission of Events.
Web service URL for event monitoring	The URL of the web service for events redirection.
Disable digest authentication URL	Check to disable digest authentication.
Disable basic authentication URL	Check to disable basic authentication.
Disable no authentication URL	Check to disable no authentication.

3 Click Save.

4.8 File Server Settings

You can define the file server, CPE download server, and CPE upload file server. These settings are device dependent. For more information for a specific device refer to Section 14.

To define server settings

1 Click the File Server menu option to enable server configuration.

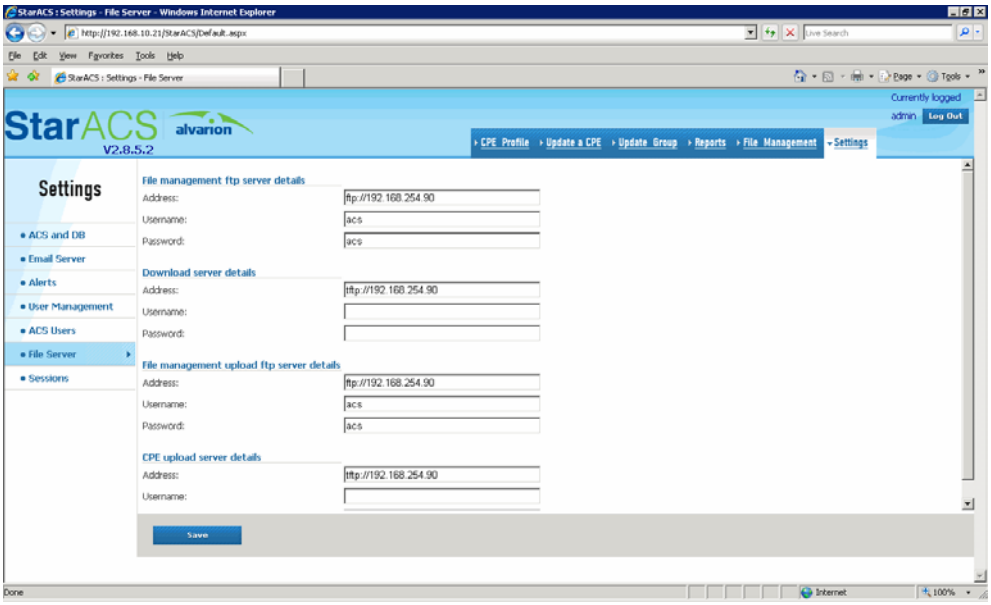


Figure 24: File Server Window

2 Set the address, username and password of the following:

- File management ftp server - URL address of the file server used for download (FTP).
  Example:
  ftp://<ftp server machine IP>
  user: ftp ACS user
  password: ftp ACS user password

- Download server - URL address from where the CPE downloads files when using the default **from list** file download option.
  Note: The settings must be changed according to the main CPE type in use.

- File management upload ftp server - URL address of the file server used for upload (FTP)
  Example:
  ftp://<ftp server machine IP>
  user: ftp ACS user
  password: ftp ACS user password

- CPE upload server - URL address to where the CPE uploads files when using the default **from list** file upload option.
  Note: The settings must be changed according to the main CPE type in use.

3 Click Save to save your settings.

4.9 Sessions

The Sessions menu option is available to users with admin privileges only and allows them to see which users are currently connected to StarACS. The current admin user is highlighted in yellow.

To view user sessions:

Click the Sessions menu option.

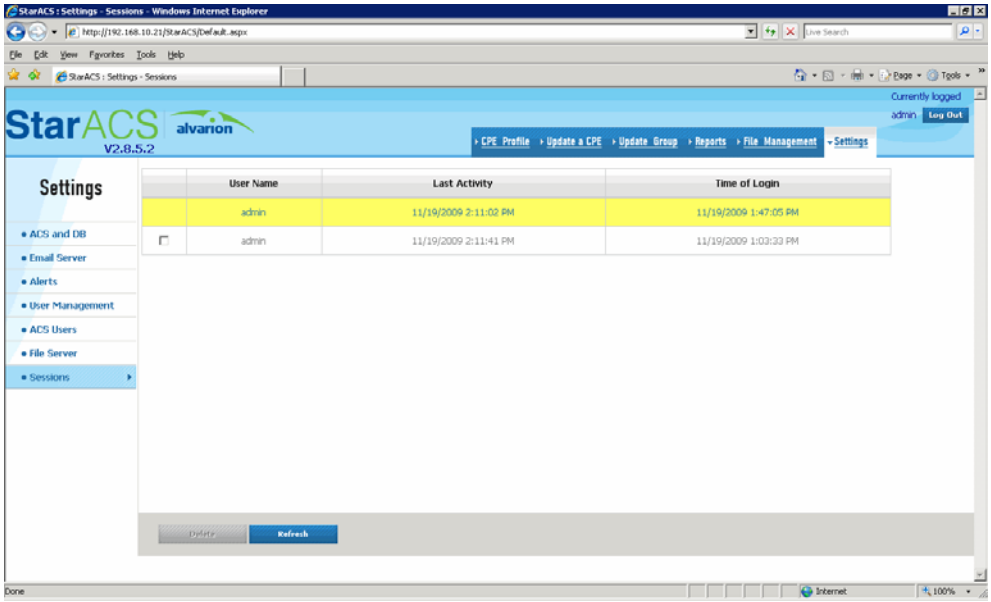


Figure 25: Sessions Window

The table displays the following fields:

- User Name
- Last Activity
- Time of Login

4.10 Licenses

The Licenses menu option enables viewing the list of licenses and adding new licenses.

To view licenses:

Click the Licenses menu option.

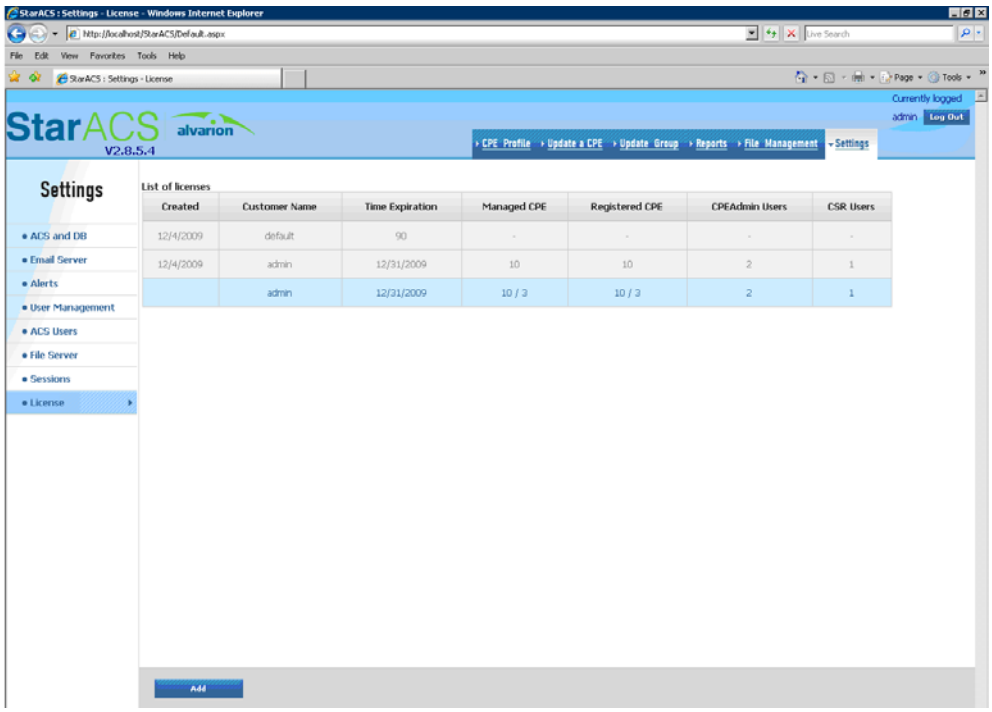


Figure 26: Licenses Window

The table displays the following fields:

- Created - the date when the license was loaded
- Customer Name - the name of the customer for whom the license was created
- Time Expiration - the number of days allowed for evaluation purposes or the expiry date of the license. If the license has no expiry date, the value is Unlimited. A warning message will be displayed two weeks before the expiration date.

- Managed CPE - the maximum number of managed CPEs. Managed CPEs are CPEs that are currently registered in ACS.

- Registered CPE - the maximum number of registered CPEs. Registered CPEs are all the CPEs that have ever been registered in the system, including CPEs that have been deleted.

- CPEAdmin Users - the maximum number of concurrent user sessions allowed. When the number of CPEAdmin Users is reached, 3 more sessions can login to ACS from different machines. You can see which users are connected in *Settings -> Sessions*.

- CSR Users - the maximum number of concurrent users allowed to connect through the CSR application

The last row of the table displays the sum of the components of all the licences that have been loaded and is color-coded as follows:

- License is active - blue

- License limit has been reached - red

If one of the fields of the last license added has an Unlimited value, then the overall value for that field is Unlimited. If one of the other licenses has an Unlimited value for a particular field, but the last license added has a value for that field, the overall value for the field is the sum of the numbers, and does not take the Unlimited value into account.

If the number of active sessions of one of the applications is exceeded, an error message is displayed on the login screen and the next user cannot login. A user with admin privileges can login and free some sessions (see Section 4.9) so that users can login to the system.

To add a new license:

1 Click Add. The following page is displayed:

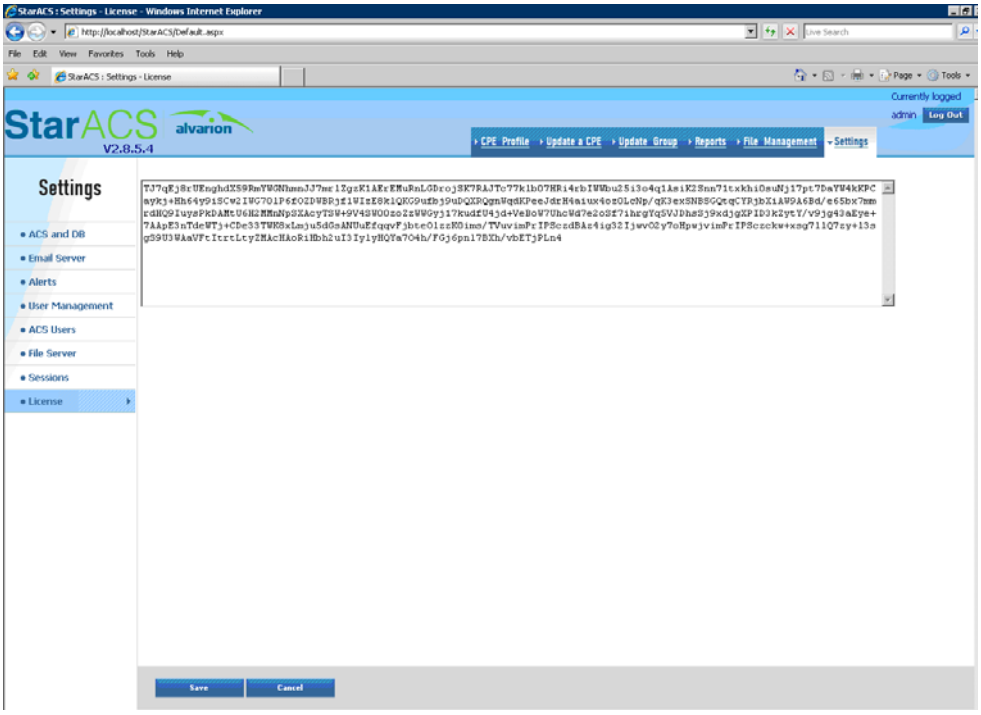


Figure 27: Adding New License

2 Enter the key information for the new license and click Save. The new license is added to the license list.

Once the ACS receives a new license key, the new license takes effect.

NOTE

The same license cannot be loaded twice onto the same StarACS system.

4.11 Whitelist

The Whitelist page displays a list of devices managed by the StarACS Management Console.

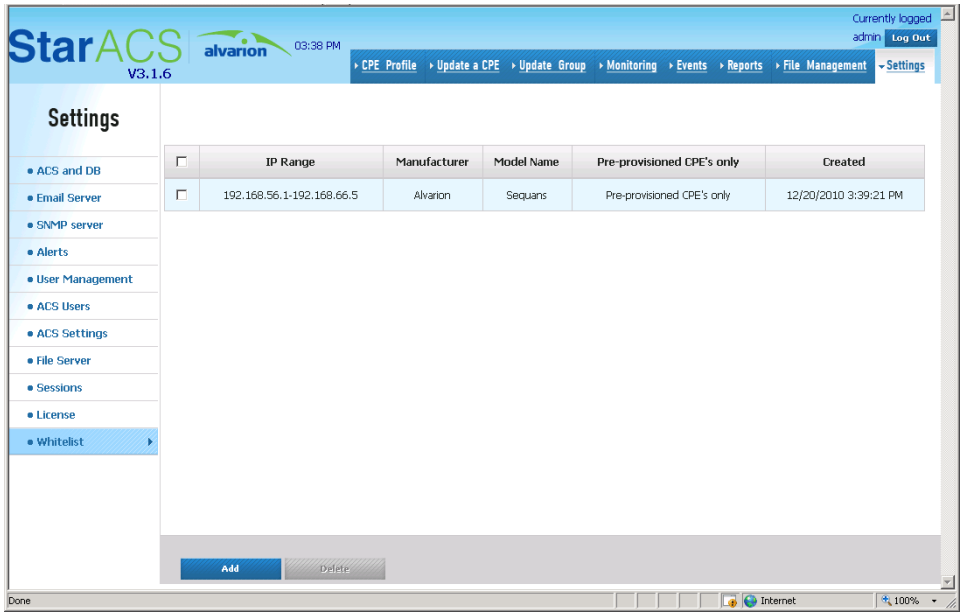


Figure 28: Whitelist Page

The following fields are displayed in the Whitelist table:

- IP Range - specifies a range of IP addresses for managed devices
- Manufacturer - device manufacturer name
- Model Name - device model name
- Created - date and time entry was created

To add a device to the whitelist:

1 Click Add. The following page is displayed.

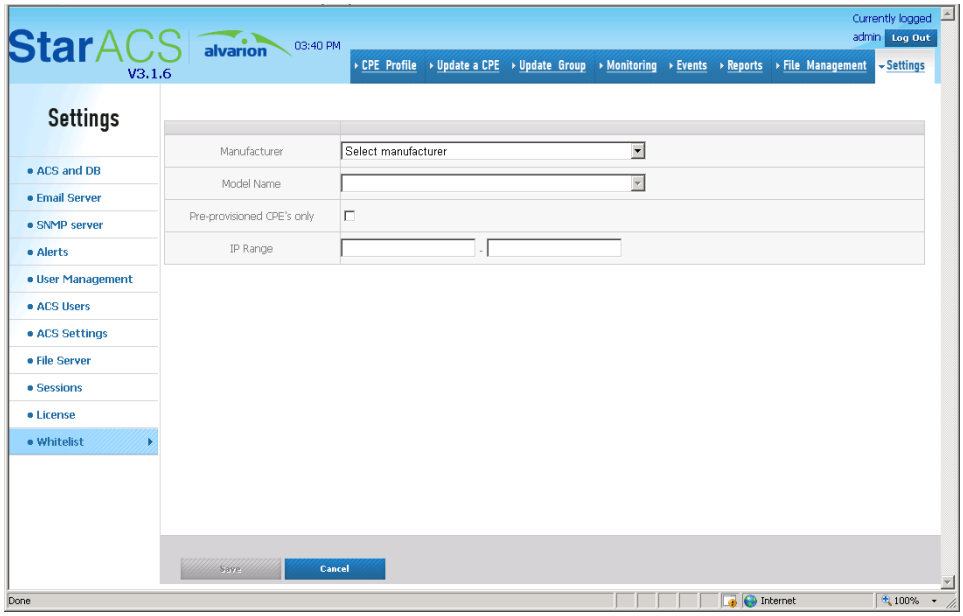


Figure 29: Whitelist - Add

2 Select the device Manufacturer.

3 Select the device Model Name.

4 To filter by IP address, enter the range of permissible IP addresses for the device in IP Range.

5 Click Save. The entry is added to the whitelist.

To edit an entry in the whitelist table:

1 Click any field in the row of the selected entry in the table. The event parameter table is displayed.

2 Edit the required parameters.

3 Click Save.

To delete a device from the whitelist:

1 In the Whitelist table, select the rows for deletion by clicking the checkbox on the leftmost column.

2 Click Delete. The entry is removed from the whitelist.

5. Defining a CPE Profile

The CPE profile serves for default provisioning of a specific CPE type. It allows to configure a specific set of parameters, firmware and configuration files to be configured on all the CPEs of a specific type upon discovery or in case of reprovisioning. All profiles must include Management Server parameters in order to allow communication with the CPE. Each CPE model can have more than one profile, however only one is active at any given time. When deleting an active CPE Profile, you must manually reactivate another profile if it exists, otherwise the Default Profile will apply for this product class.

The Default Profile contains only generic Management Server parameters. These parameters can not be deleted, nor can other parameters be added, but the values can be edited. The Default Profile is intended for unknown or unmanaged CPEs. It is built in when the server is first installed and cannot be deleted.

To define a CPE profile, you must first creat a template for this CPE type.

The profile takes effect when:

- The CPE connects for the first time
- When a change has been performed on the profile
- When clicking the Reprovision CPE button in the single CPE configuration or when triggering this option through the NBI.

Click the CPE Profile tab to display the CPE Profile page. The CPE Profile menu has the following options:

- “Viewing and Managing CPE Profiles” on page 35
- “Importing CPE Profiles” on page 39
- “Creating a New CPE Profile” on page 40

5.1 Viewing and Managing CPE Profiles

In general, the CPE sends its whole data model to the StarACS during the first connection; on subsequent Inform connections, the CPE sends only a select group of management parameters.

Click the View menu option to display a table of CPE profiles:

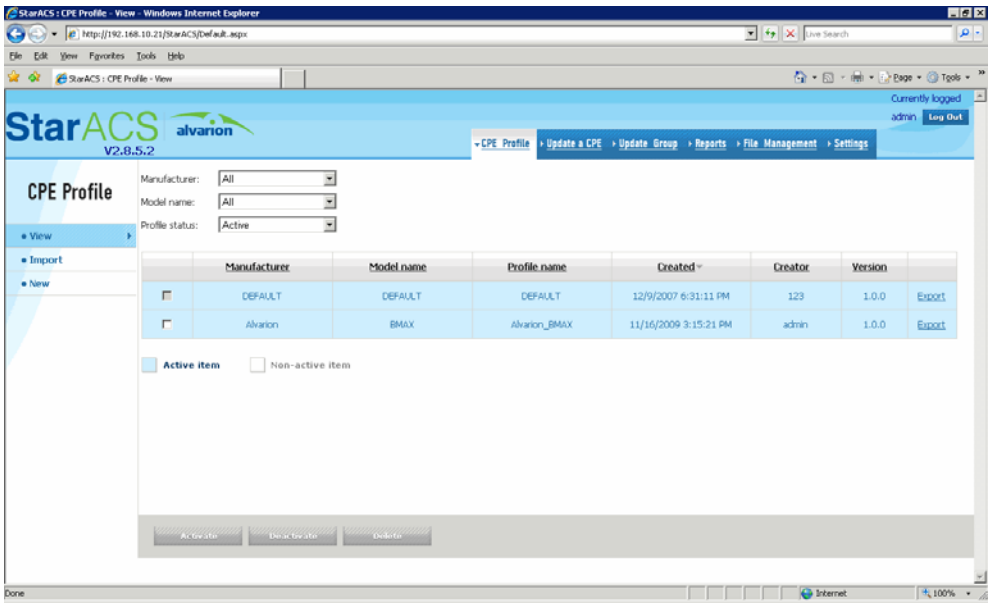


Figure 30: CPE Profiles Window

The table may be filtered by:

- Manufacturer
- Model name
- Profile status - (Active or Not Active)

The table displays the following fields:

- Manufacturer - CPE manufacturer or DEFAULT
- Model name - CPE model name or DEFAULT
- Profile name - CPE profile name or DEFAULT
- Created - CPE profile creation date and time
- Creator - username who created the CPE profile
- Version - CPE profile version number

The following actions are available:

- Sort - sorts the table by the selected field
- Edit - edits the selected profile
- Export - exports the selected profile to an xml formatted file
- Activate - activates the selected profile. An unknown/unmanaged CPE will receive the active default profile parameters when first connecting to the ACS.
- Deactivate - deactivates the selected profile
- Delete - deletes the selected profile

To sort the profile table by a field:

Click the selected field name in the profile table header row. The profile table is sorted by the selected field in ascending order (▲). To sort in descending order (▼), click the selected field name again.

To export a profile:

Click Export for the selected profile entry in the table. A dialog box opens asking if you want to open or save the profile file.

To activate a profile:

1. Check the box in the row for the selected profile entry in the table or use the check all functionality in each page.
2. Click Activate. The profile is activated and the table row is color-coded blue.

To edit a profile:

1. Click any field in the row of the selected entry in the table. The profile parameter table is displayed.

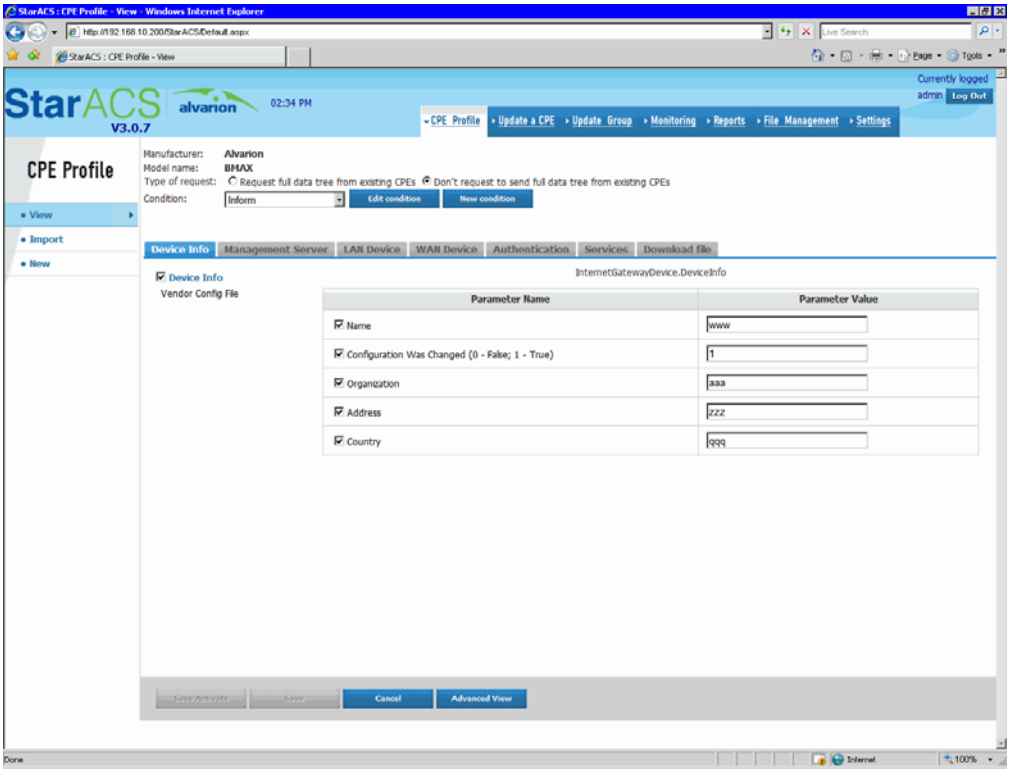


Figure 32: Editing CPE Profile

2 Select whether or not to send a request for the full data tree from existing CPEs. This will configure whether upon reprovisioning the CPE, the full data tree will be retrived or not. It does not apply to the CPE discovery phase.

3 Select a condition from the drop-down list or create a new condition.

4 Click the parameter group tab (e.g. Management Server).

5 Edit the parameter values (Refer to "Device Dependent Configuration" on page 134).

6 To view the entire parameter tree, click Advanced View.

7 To save the profile without activating it, click Save. To save the profile and activate it, click Save and Activate. The profile is saved. If activated, the table row is color-coded blue. Activating automatically deactivates any previous active profile for a specific CPE model (if exists).

8 You can deactivate the profile by using the buttons located at the bottom.

5.1.1 Default Profile

The default profile is intended for CPEs for which there is no dedicated profile, and contains a few basic management parameters to facilitate the connection between the ACS and CPE. Unknown CPEs can be fully managed except for having a common CPE configuration file. There can be several Default profiles; however, only one can be active at any given time. The active default profile parameters are assigned to a newly connected CPE. See "Default Profile Parameters" on page 132.

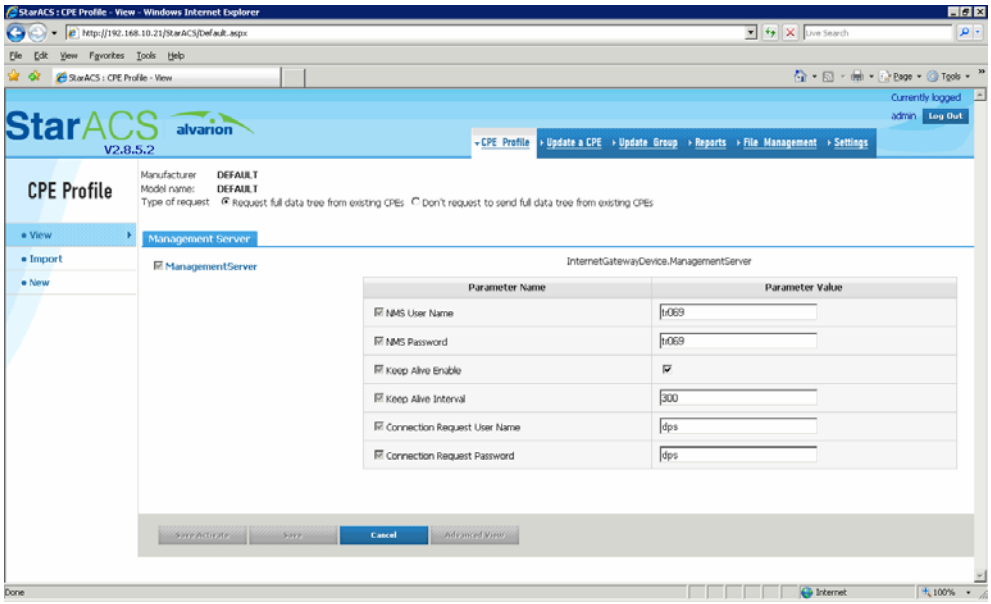


Figure 34: Default Profile Window

5.2 Importing CPE Profiles

Importing a profile is useful for rapidly performing backup-restore or pre-configuring CPE profiles instead of creating them manually. You can import existing xml profile files to your list of profiles and can activate a profile as the currently used default profile for new CPEs.

To import a CPE profile:

1 Click the Import menu option to import a profile. The following page is displayed:

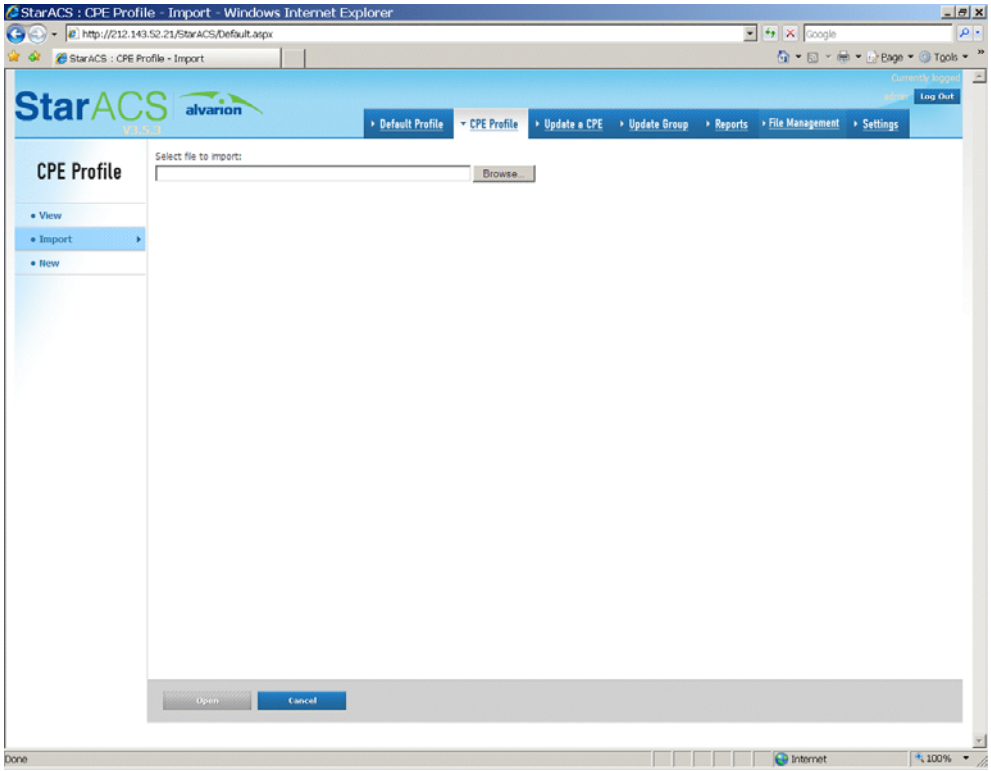


Figure 35: Import Profile Window

2 Enter the file name or click Browse to select the file to import.

3 Click Open. The imported profile is displayed.

5.3 Creating a New CPE Profile

Creating a CPE profile means that all CPEs of the same manufacturer and model that comply with the selected condition will receive this profile as part of the initial connection. A CPE profile is translated into a device configuration profile with TR objects and parameters. You can also create a new default profile to be used as your default for unknown/unmanaged CPEs.

A new CPE profile can be created only if a profile template exists.

To create a new CPE profile:

1 Make sure a template exists for the CPE you want to create a new profile. If not, create a template as follows:

a Click Update a CPE and select a CPE with the Manufactuer and Model Name for which you want to create the template. The CPE for which the profile is created must have a pre-created template.

b Click the Device Info menu option; the information about the device is displayed.

c Click the Create Template button; a template is created.

d Click CPE Profile to return to the CPE Profile page.

2 Click the New menu option. The following page is displayed:

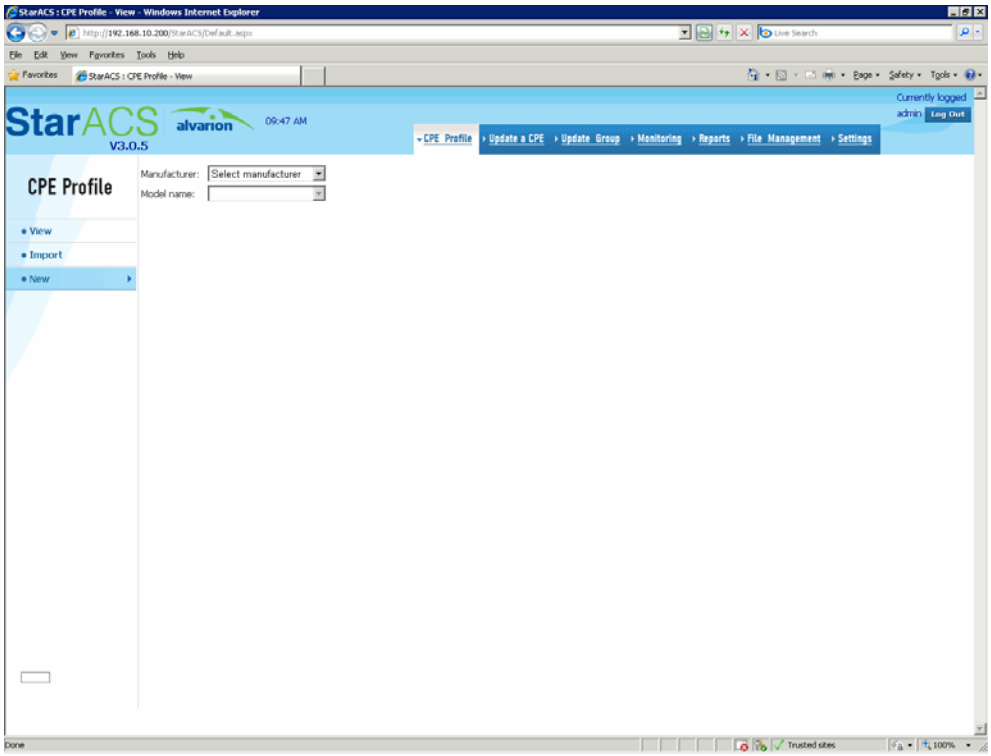


Figure 36: Create a New CPE Profile

3 Select the Manufacturer and Model name. If a template exists for this model, a page similar to the following is displayed:

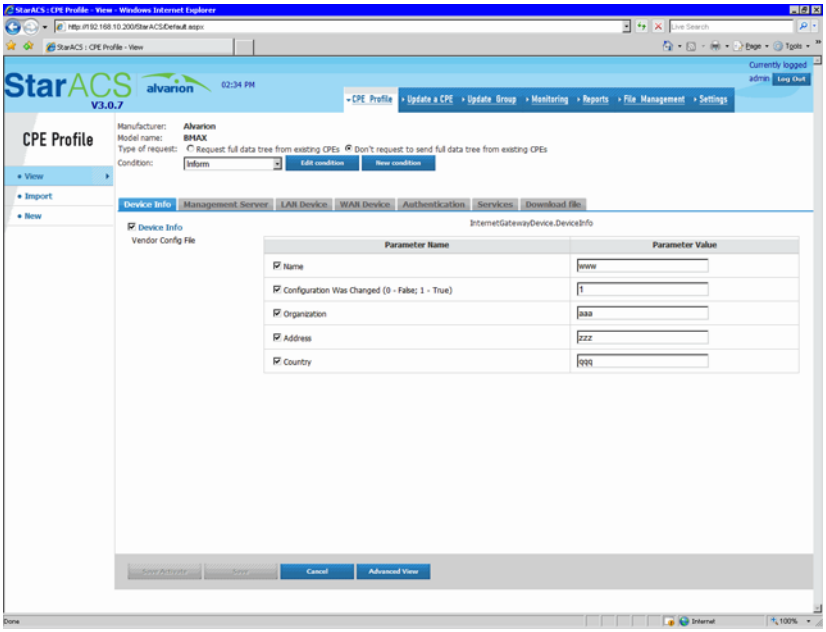


Figure 37: New CPE Profile

4 Select whether or not to send a request for the full data tree from existing CPEs. This will configure whether upon reprovisioning the CPE, the full data tree will be retrived or not. It doesnot apply to the CPE discovery phase.

5 Click New Condition to add conditions and click Next. If no condition is defined, the profile will apply to all CPEs of the selected Manufacturer and Model Name.

6 Enter a Condition Name and click Next.

7 Click Add to define the condition.

8 Check the box to select the type of filter condition. The filter can be based on information from Inform or on User's Info.

- User's Info is information about the customer behind the CPE and can only be added from NBI.
- Inform allows configuring conditions based on the information in the inform sent by a specific CPE. This profile will apply only to CPEs sending the inform with that specific parameter. For Inform parameters refer to Section 14.

9 Select the name of the condition from a list, enter a value and click Save. The condition will be displayed in a table.

10 Once you have defined all filter conditions, click Finish to reurn to the New CPE Profile window.

11 Edit the relevant profile parameters according to the CPE model or default profile. See “Device Dependent Configuration” on page 134 or “Default Profile Parameters” on page 132 for details.

NOTE

Management Server parameters must always be configured in a profile in order to provide connection data between ACS and the CPE.

5.4 Fast Provisioning of a New CPE

When a CPE is logged into the ACS system for the first time, parameters configured in the CPE Profile are automatically set on the CPE.

If there is no profile model for the specific CPE model or manufacturer, the default profile values are applied to the newly introduced CPE.

6. Updating a CPE

An update to a specific CPE can originate from the following sources:

- Update of an individual CPE under the "Update a CPE" tab
- Update individual CPEs as part of a group update under the "Update group" tab
- CPE settings sent from external systems via northbound interface (API)
- A combination of the above

Note that the update tasks are executed according to a queue utilizing FIFO.

The CPE Profile mechanism has its own queue. When a firmware update is sent to the CPE, all other updates will be put on hold until the firmware is updated.

Click the Update a CPE tab to display the following menu options:

- Search
- List

The Search menu option enables listing specific CPE devices. The List menu option lists all CPE devices in the system (see “List Menu Options” on page 52).

6.1 Searching CPEs

Click the Search menu option to enable searching for a device by one of the following parameters:

- Serial Number
- MAC address
- Authentication Username
- Running SW Version
- Shadow SW Version
- Serving BS ID

- Con Req URL (can be used for searches based on WAN IP addressfor CPEs that do not support external IP addresses if the Search match only option is not checked)

- External IP Address

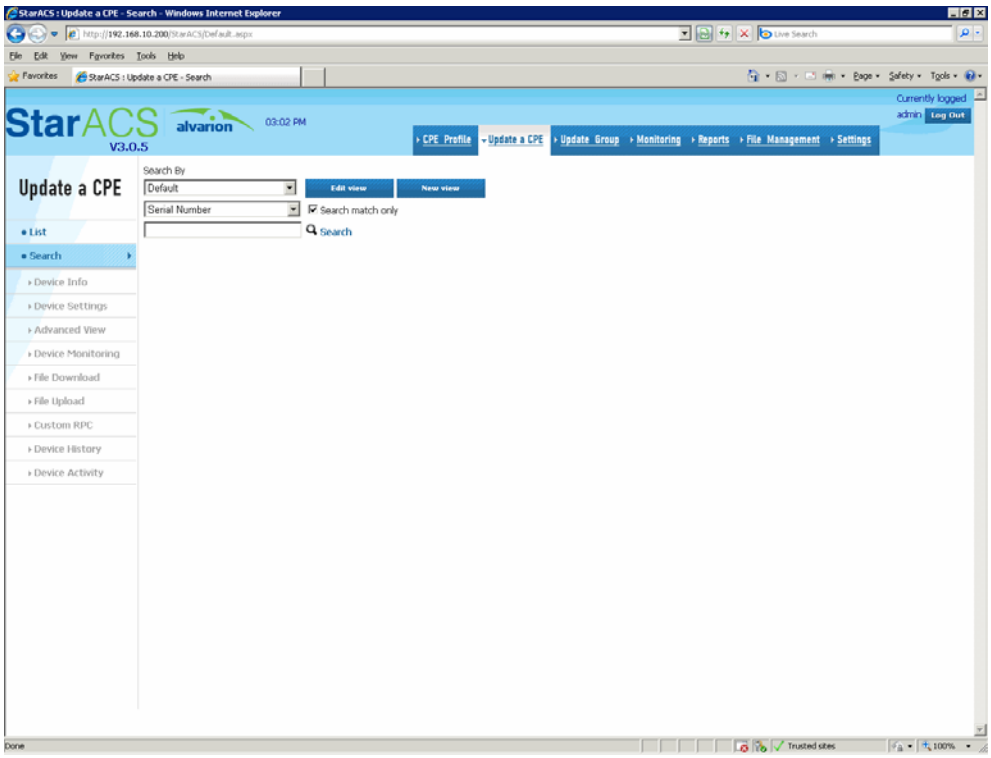


Figure 38: Search Window

To search for CPE devices:

1. Select the parameter type to be searched for from the Search by list.
2. Enter a partial or complete parameter string in the lower text box.
3. To list complete parameter string matches only, check the Search exactly box.
4. Click Search. A table with the list of matching CPE devices is displayed. The view of the table can be changed (see Section 6.2)

In the example below, all CPE devices were searched for serial number containing the string '2_5'.

NOTE

When searching by mac address, the expression can use any of the following as delimiters: hyphen, colon, space.

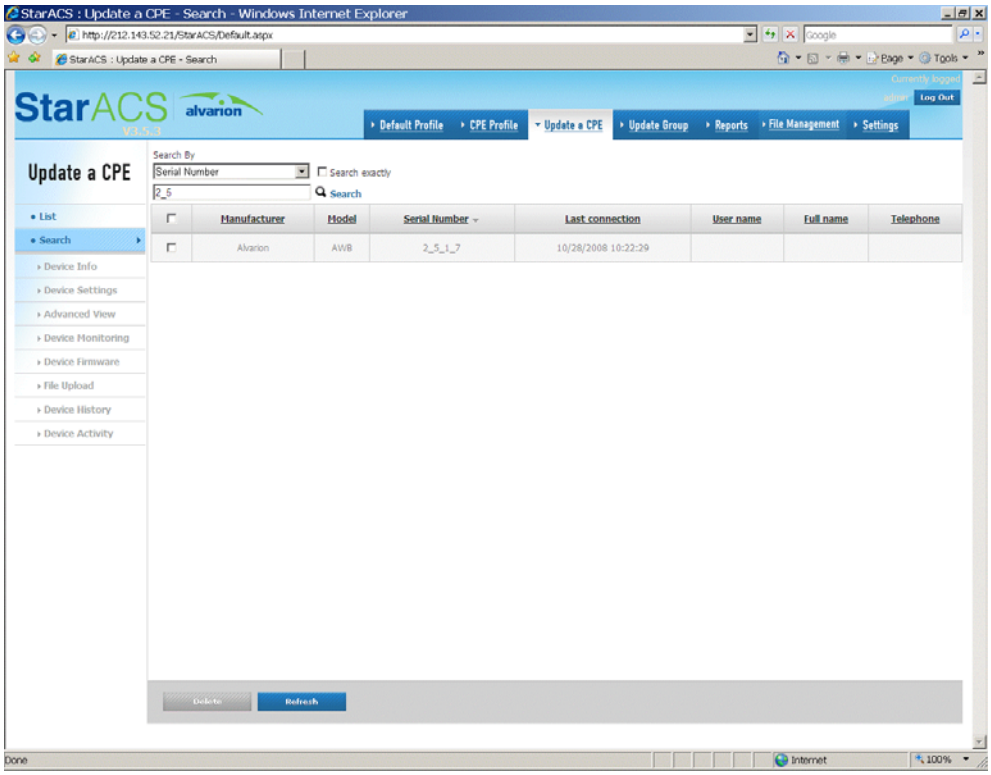


Figure 39: Search Example

6.2 Viewing CPE List

Click the List menu option to list all CPE devices in the system. A table of all devices registered in the system is displayed. The table may be filtered by:

- View
- Manufacturer
- Model name

The following controls are available:

- Edit view - enables to modify the parameters displayed in the current view

- New view - enables to select the parameters to be displayed in a new view
- Delete - deletes the selected CPE from the list
- Refresh - refreshes the display
- Trace CPE - sets up a trace for a specific CPE that is not yet registered in ACS

The view of the table can be changed to display any (or all) of the following parameters:

- Created
- Description
- Summary
- Device summary
- Hardware version
- Identity
- IP Address
- MAC Address
- Manufacturer
- Model name
- Pending tasks
- Provisioning code
- SW version
- Serial
- Serving BS ID
- Spec Version

- Telephone
- Updated
- Uptime
- User Id
- User login
- User name
- User tag
- Zip

A view of the table can be exported to a .csv file.

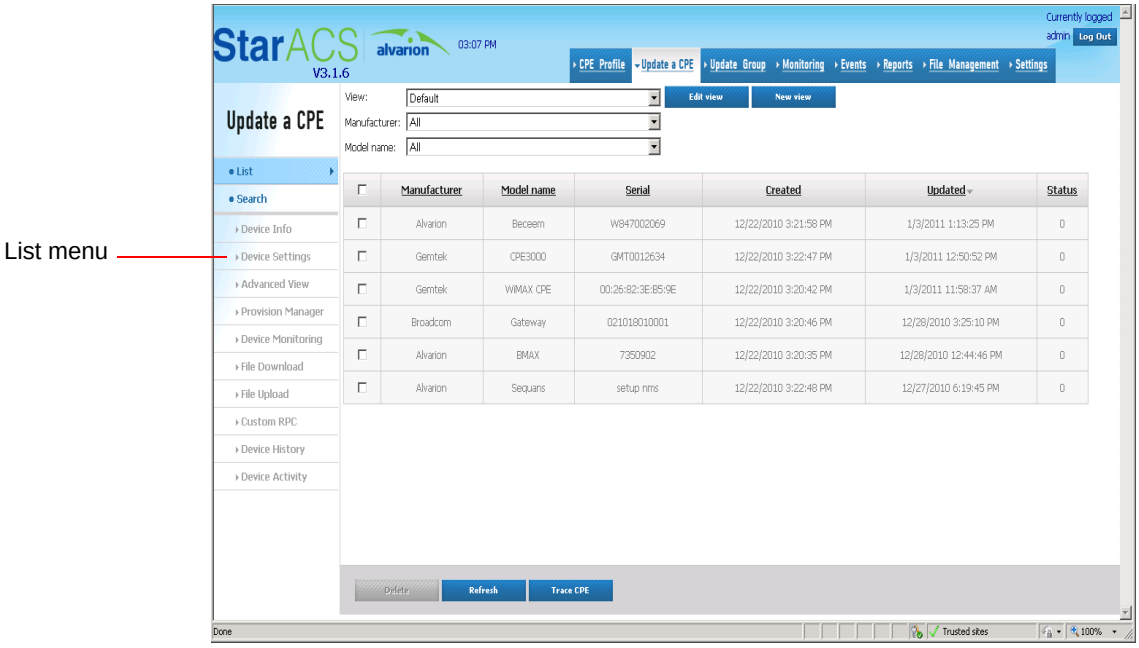


Figure 40: CPEs List

To edit the view of the CPE list:

1 Click Edit view. The Edit custom view page is displayed.

2 Change the name for the new view if desired, select whether to set the view as Default for public or for current user, and click Next. A list of all the columns is displayed.

3 Select the parameters to be displayed in the Visible column and click Next.

4 Use the Top, Bottom, Up and Down buttons to set the order of the columns and click Next.

5 Click Add Filter to add filters.

6 Enter filter criteria and click Next. Multiple criteria can be added and connected with And or Or operators.

7 Set the order in which the rows should be sorted and click Finish. The selected parameters will be displayed in the list of CPE devices.

To create a new view of the CPE list:

1 Click New view. The Create new custom view page is displayed.

2 Enter a name for the new view, select whether to set the view as Default for public or for current user and click Next. A list of all the columns is displayed.

3 Select the parameters to be displayed in the Visible column and click Next.

4 Use the Top, Bottom, Up and Down buttons to set the order of the columns and click Next.

5 Click Add Filter to add filters and click Next.

6 Enter filter criteria and click Next. Multiple criteria can be added and connected with And or Or operators.

7 Set the order in which the rows should be sorted and click Finish. The selected parameters will be displayed in the list of CPE devices.

To export a view of the CPE list:

1 Select a view from the drop-down list.

2 Click Edit view. The Edit custom view page is displayed.

3 Click Export list. A File Download window is displayed.

4 Click Save and enter a name and path for the file. The file is saved as a .csv document.

To trace a CPE:

1 Click **Trace CPE**. The *Trace CPE* page is displayed.

2 Select the CPE Manufacturer.

3 Select the CPE Model Name.

4 Enter the CPE Serial Number.

5 Click Save. The trace for the specified CPE is configured.

NOTE

Enables monitoring of SOAP traffic between the CPE and StarACS. The trace can be seen after the CPE registers by pressing the button Show Trace.

6.3 Device Table Actions

After using the Search menu option, a table of devices is displayed.

The following controls are available for the device table:

- Delete - deletes the device from the device table
- Refresh - refreshes the device table display
- Sort - sorts the device table by selected parameter
- Device Info - displays information for a selected device and enables the List menu options

To delete a device from the device table:

1 Check the box for the device entry in the table

2 Click Delete. The device is deleted from the device table.

To refresh the device table display:

Click Refresh. The device table display is refreshed.

To sort the device table by parameter:

Click the selected parameter name in the device table header row. The device table display is sorted by the selected parameter in ascending order (▲). To sort in descending order (▼), click the selected parameter name again.

To display information for a device and enable the List menu options:

Select a device from the device table by clicking on its row. The Device Info page is displayed and the List menu options are enabled.

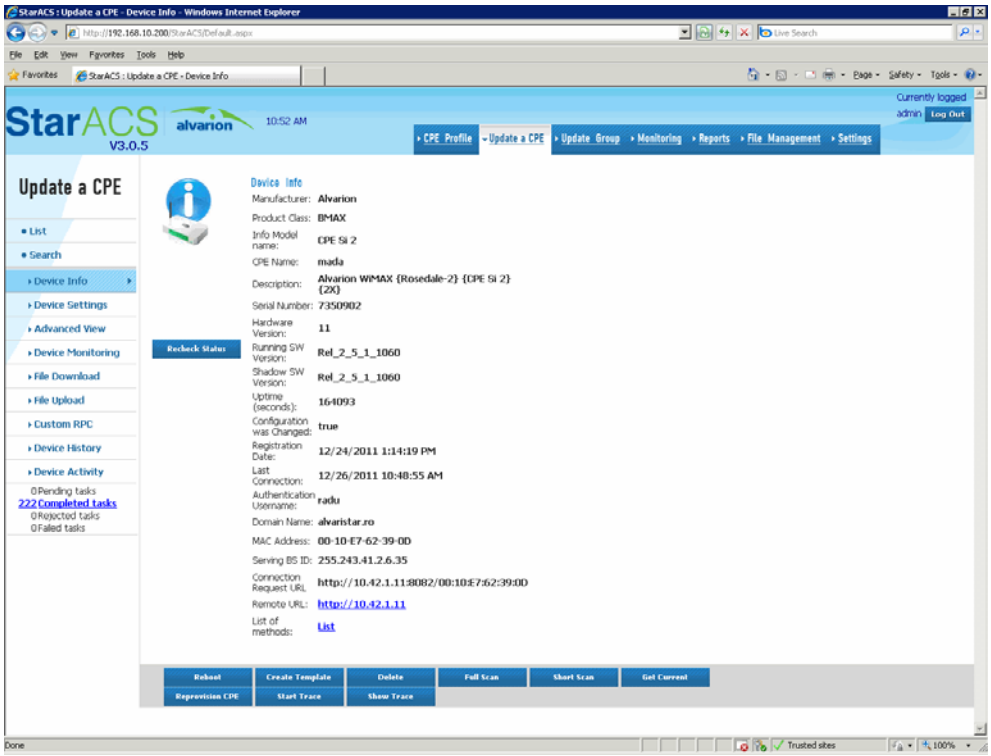


Figure 41: Device Info Page

6.4 List Menu Options

After selecting a device from the device table, the Device Info page is displayed and the List menu options are enabled (Figure 41).

The List menu contains the following options (detailed in the next sections) for the selected device:

- Device Info
- Device Settings
- Advanced View
- Device Monitoring
- File Download
- File Upload
- Custom RPC
- Device History
- Device Activity
- Task Information:
  - » Pending tasks
  - » Completed tasks
  - » Rejected tasks
  - » Failed tasks

6.4.1 Device Info

The Device Info option opens the Device Info page (Figure 41), which displays general device parameters including manufacturer, OUI, model, description, serial number, hardware version, firmware version, up time, notification about changes done to the device, a link to the local web page of the device, and a list of methods supported by the device.

The controls that are available on the Device Info page are device specific and differ for the different devices. The following controls are available:

Table 3: Device Info Controls

Control	Description	BreezeMAX 1000 CPEs	BreezeMAX 5000 CPEs	BreezeMAX 2000, 3000 and 4000 CPEs NG_VG *
Reboot Device	Reboots the device	Yes	Yes	Yes
Factory Reset	Resets the device parameters to the factory default settings	No	Yes	Yes
Create Template	Creates a template for the device (a prerequisite for creating a new CPE profile. See also "Creating a New CPE Profile" on page 40	Yes	Yes	Yes
Delete	Deletes the device from the system	Yes	Yes	Yes
Full Scan	Searches all the base stations that have connected the CPE	Yes	No	No
Short Scan	Scans by a frequency table	Yes	No	No
Clear Stats	Clears statistics	Yes	No	No
Get Current	This is active when Configuration was Changed is set as true. Pressing this control button sets Configuration was Changed to false and the list of all parameters is retrieved from the device.	Yes	No	No
Run from Shadow	Performs Run from Shadow .	No	Yes	No
Set as Main	If the software version is running from shadow, performs Set as Main .	No	Yes	No
Recheck Status	Rechecks the device status (Note: To conserve system resources, use this control sparingly)	Yes	Yes	Yes
Start Trace	Enables monitoring of SOAP traffic between the CPE and StarACS. **Note:** Monitoring stops automatically after one hour.	Yes	Yes	Yes
Show Trace	Shows the SOAP traffic between the CPE and StarACS	Yes	Yes	Yes
Ping	Pings the CPE to test its reachability			

Table 3: Device Info Controls

Control	Description	BreezeMAX 1000 CPEs	BreezeMAX 5000 CPEs	BreezeMAX 2000, 3000 and 4000 CPEs NG_VG *
Trace Route	Traces the route and displays the hops to the CPE			

NOTE

*The NG_VG is a device that connects physically behind the CPE at the customer location. The Device Info page includes a parameter with a link between the NG_VG device and the associated CPE. The parameter is called **Associated CPE** on the Device Info page of the NG_VG and **Associated NG_VG** in the Device Info page of the CPE. The **Associated NG_VG** parameter is not a real parameter and is created by the ACS based on the parameter in the voice gateway in order to facilitate browsing between the two associated devices.

6.4.2 Device Settings

The Device Settings page displays device parameters and enables their configuration. The device parameters are organized by group tabs, such as Management Server, Services, WAN Device, LAN Device, Authentication. The tabs vary depending on the CPE model, and for different models, different tabs are displayed. It is only a sub-set of parameters; the full list is in the Advanced View (see "Advanced View" on page 56). For information about parameters, see "Device Dependent Configuration" on page 134.

The following controls are available on the Device Settings page:

- Send Update - sends the update to the device
- Get Current - retrieves the current value of the device parameters

To edit parameters in a group of settings:

1 Click the parameter group tab. The parameter group table is displayed. The relevant device parameters are enabled for editing.

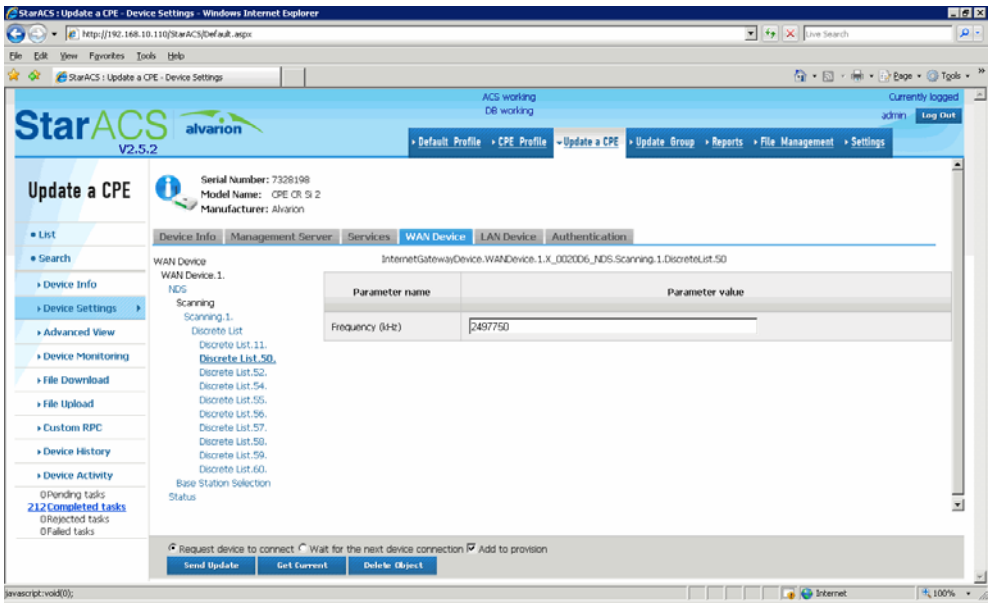


Figure 42: Device Settings

2 Edit the desired parameter values. Refer to "Device Dependent Configuration" on page 134.

3 Select the control options. The following controls are available:

- Request device to connect - sends a request to the device to connect and receive the updated parameters for immediate execution of the required configuration/action
- Wait for the next device connection - updates the device parameters on the next periodic connection initiated by CPE automatically (when periodic informing is enabled)
- Add to provision - controls which parameters are added to provisioning for each device together with the parameters in the CPE Profile.
- Send Update - sends the update to the device
- Get Current - retrieves the current parameter values
- Add Object - creates a new instance of a multi-instance object, a collection of parameters and/or other objects for which multiple instances are defined
- Delete Object - deletes an instance of a multi-instance object

6.4.3 Advanced View

The Advanced View page displays all the parameters in the TR-069 tree and enables parameter configuration. For detailed information about device dependent parameters see Section 14 ("Device Dependent Configuration" on page 134).

The following controls are available on the Advanced View page:

- Send Update - sends the update to the device
- Get Current - retrieves the current value of the device parameter
- Add Object -creates a new instance of a multi-instance object, a collection of parameters and/or other objects for which multiple instances are defined
- Delete Object -deletes an instance of a multi-instance object - check whether these are ever displayed

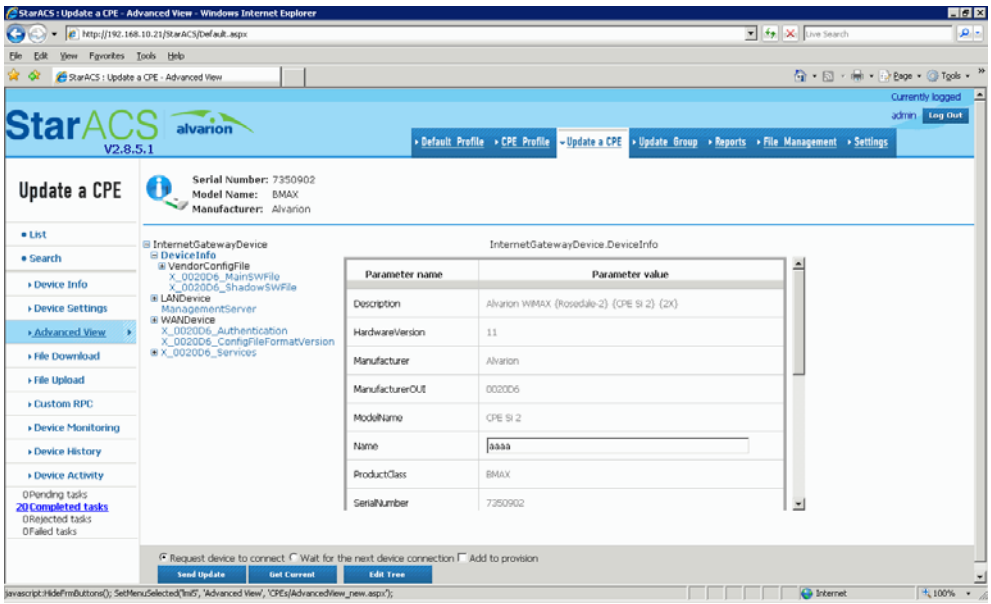


Figure 43: Typical Advanced View Page

6.4.3.1 Edit Tree

The Edit Tree feature enables limiting the number of parameters that are requested from a CPE when it registers the network. When a CPE profile reapplies to a set of CPEs, if the option Request full data tree from existing CPEs is selected, only those parameters that were checked in the tree will be retrieved. By selecting

only important parameters to be retrieved upon discovery and reprovisioning, the load on the network is reduced. Even if the option is changed on a specific CPE, it applies to all CPEs of that Manufacturer and Model Name.

To edit parameters in the tree:

1 Select The Edit Tree control option. The following page is displayed:

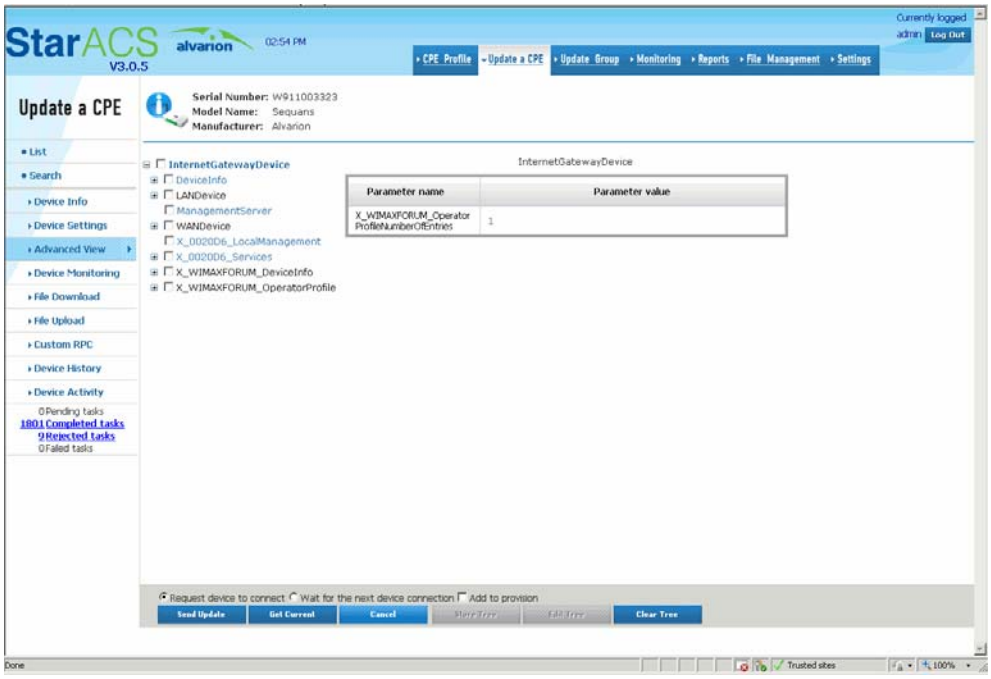


Figure 44: Edit Tree

2 Select the desired parameter group by clicking the corresponding tree branch in the left pane. Drill down the tree if necessary.

3 Edit the selected parameter values. To view the complete object name of the parameter, point the mouse to the parameter name in the table.

4 Select the control options. The following controls are available:

- Cancel
- Store Tree - saves the selection and exits the edit mode
- Clear Tree - clears all the previously selected options

6.4.4 Provision Manager

The Provision Manager displays all the parameters that are sent to the CPE for reprovisioning. These are the parameters that were marked to “Add to provision” in the Device Setting page (Section 6.4.2).

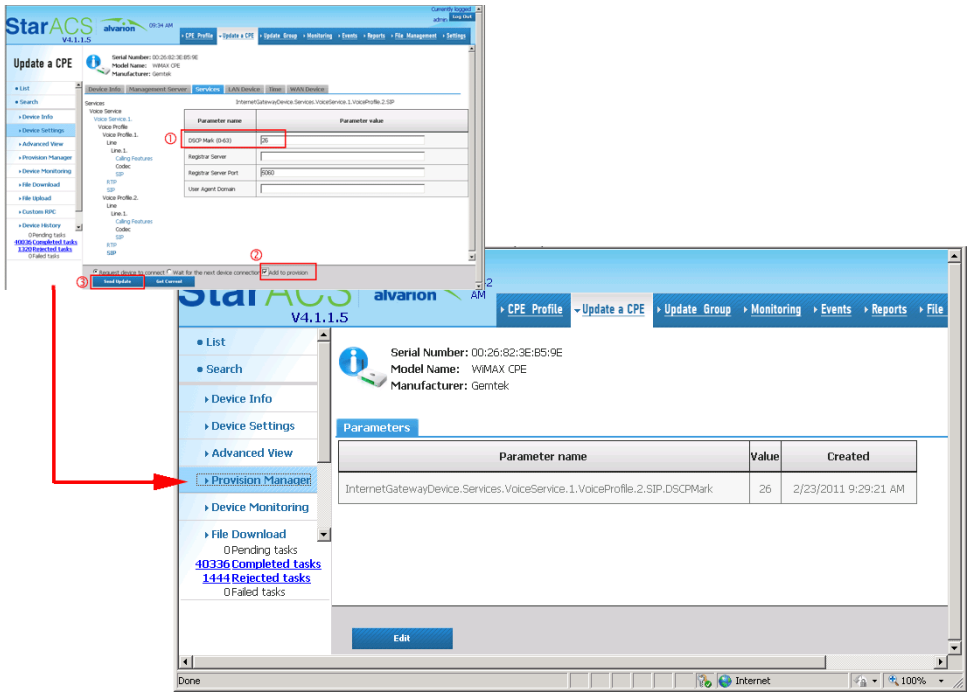


Figure 45: Provision Manager

To edit the provisioning parameters from the Provision Manager:

1. In the Provision Manager, click **Edit**.
2. Select the parameters to edit.
3. Change the value for these parameters.
4. Click **Save**.

To remove parameters from the Provision Manager:

1. In the Provision Manager, click **Edit**.
2. Select the parameters to delete.

1 Click **Delete**.

6.4.5 Device Monitoring

The Device Monitoring option opens the Device Monitoring page, which displays the parameters that can be monitored for the particular device.

The following controls are available on the Device Monitoring page:

- Start - retrieves counters for selected parameters at a defined interval (default 30000 ms) for as long as the page remains open.
- Stop - stops the counters for the selected parameters
- Refresh - retrieves counters for selected parameters one time only

To retrieve counters:

1 Select the check-box(es) for the counters, or select the top check-box to select all the parameters.

2 Click Start. A task is sent to retrieve the information and a hyperlink to a graph showing the counters over time is displayed in the Graph column once the first task has been completed.

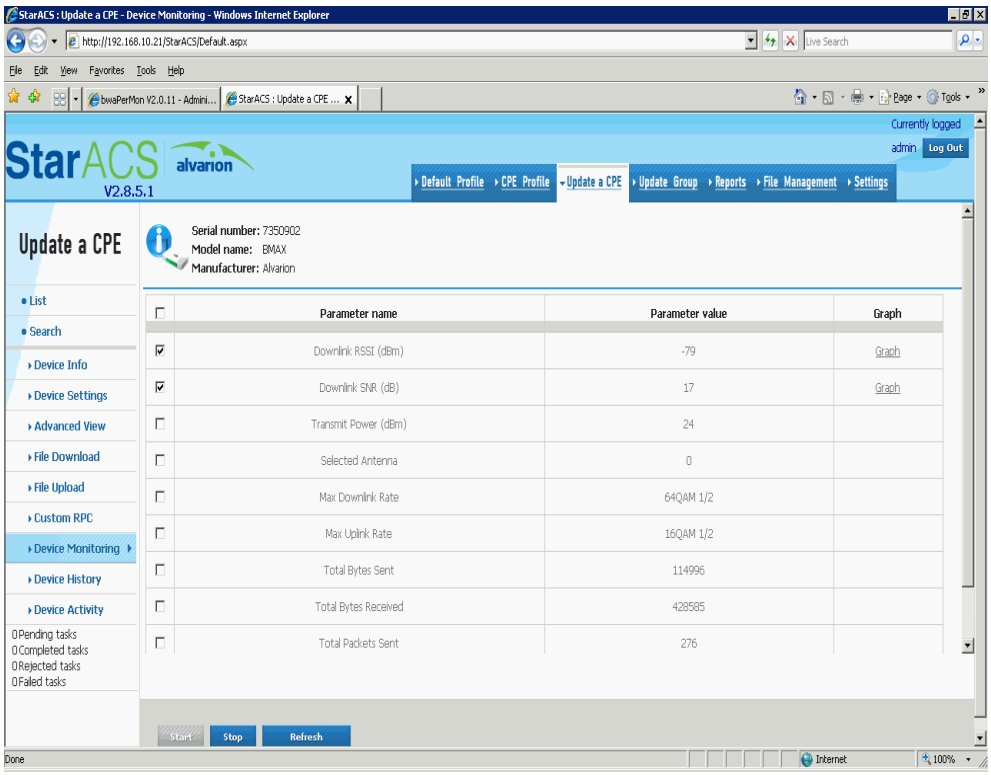


Figure 46: Device Monitoring Page

3 Click the Graph hyperlink for a particular parameter to display the counters for this paramater over time.

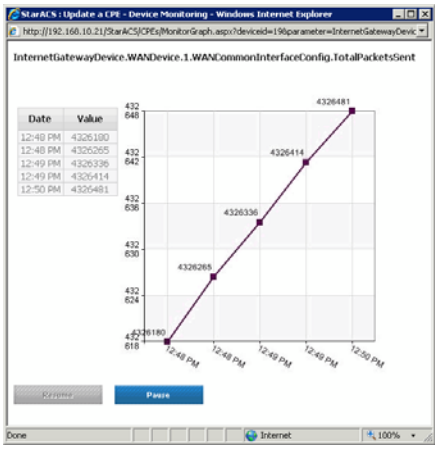


Figure 47: Graph showing values of parameter over time

6.4.6 File Download

The File Download option opens the File Download page, which enables downloading firmware image or vendor configuration files to the CPE device.

The firmware image file must be uploaded to the TFTP/HTTP server prior to executing the firmware update. Once the image file has been uploaded, you need to supply the location to access the image file on the TFTP/HTTP to be used by the CPE.

NOTE

For details about the file download configuration for a specific device refer to Section 14.

The following fields are available on the File Download page:

- File type - drop down selection menu of the type of file. The possible file types are Firmware Image, Web Content (currently not applicable) and Vendor Configuration File
- Select file location - drop down selection menu of the location of the file. The possible values are From list, Manually and Restore (for Vendor Configuration File type only).

The following controls are available on the File Download page:

- Send Update - sends the file update to the CPE
- Cancel - cancels the action

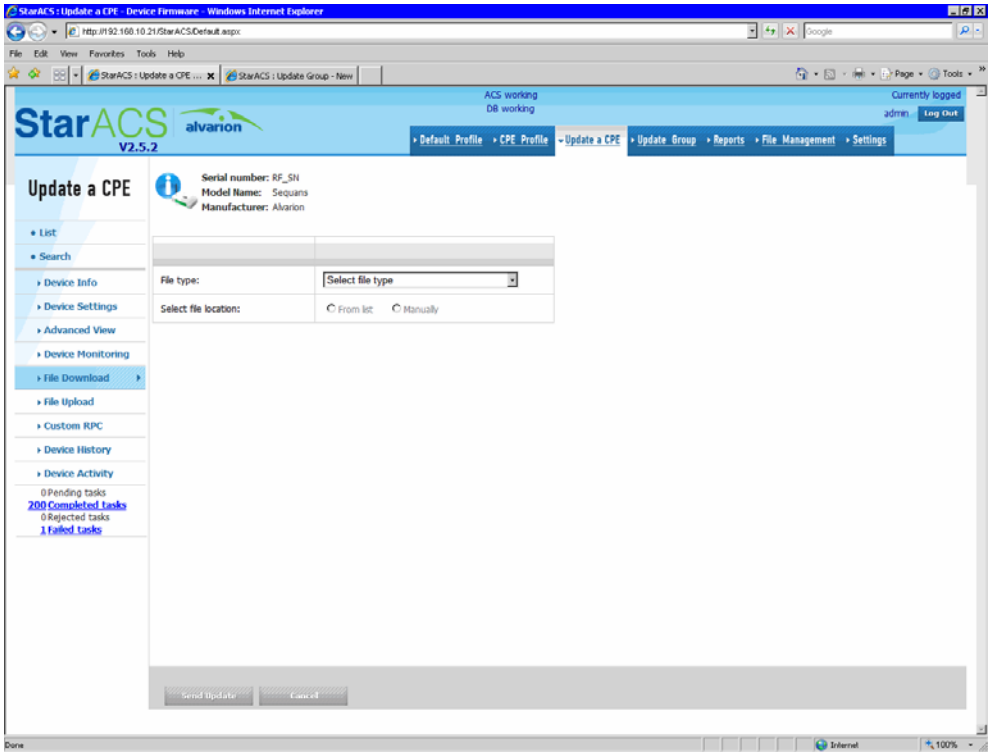


Figure 49: File Download Page

To update a file:

1. Select the File type from the drop down list.
2. Modify the following parameters as required:

Table 4: File Download Parameters

Parameter Name	Description	Range
File type	The type of file used for download	Firmware Image Vendor Configuration File
Description	Description of the current file	Optional value
Select file location	Select the location from where the file will be downloaded	■ From list ■ Manually ■ Restore (for Vendor Configuration File)

Table 4: File Download Parameters

Parameter Name	Description	Range
File name	The name of the file as it appears in File Management	
Url	The URL for the file transfer server	Device dependent value
Target location	The target location for the file transfer server	Device dependent value
User Name	User Name for the file transfer server	Leave empty
Password	Password for the file transfer server	Leave empty
File size	File Size in KB	File Size in KB

3 Select the file location.

- If you chose From list, Figure 50 is displayed:

NOTE

In order to use this option the following conditions should be met:

1. The File Server settings should be according to current CPE type (see Section 4.8).
2. The file to be downloaded should be loaded to the StarACS file system (see Section 11).

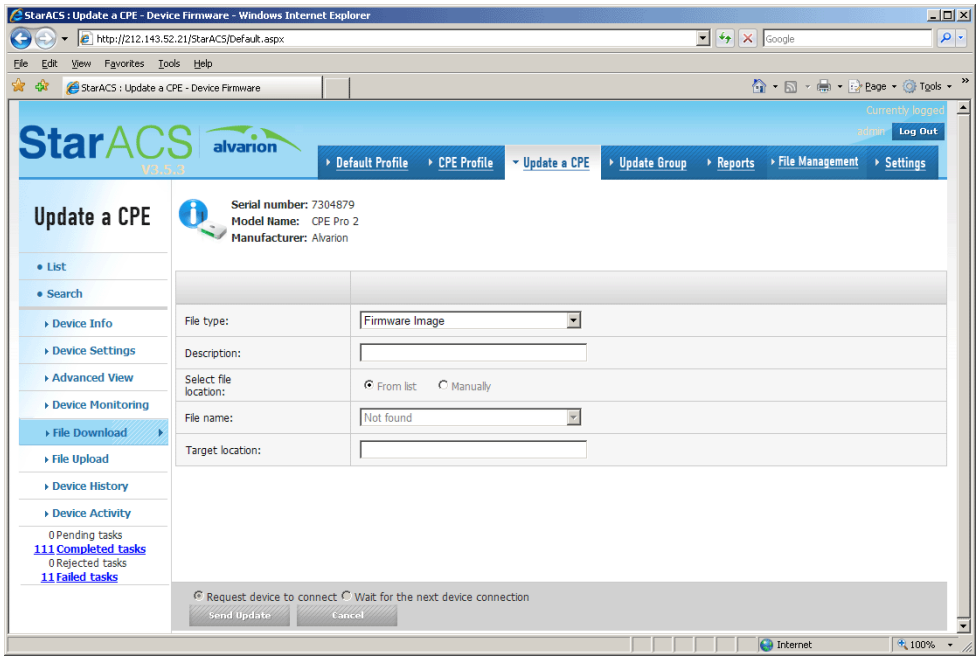


Figure 50: Select File from List

a Select the File name from the list. (The list can be modified in the File Management area of the application.)

b Leave the Target location field empty.

- If you chose Manually, the following page is displayed:

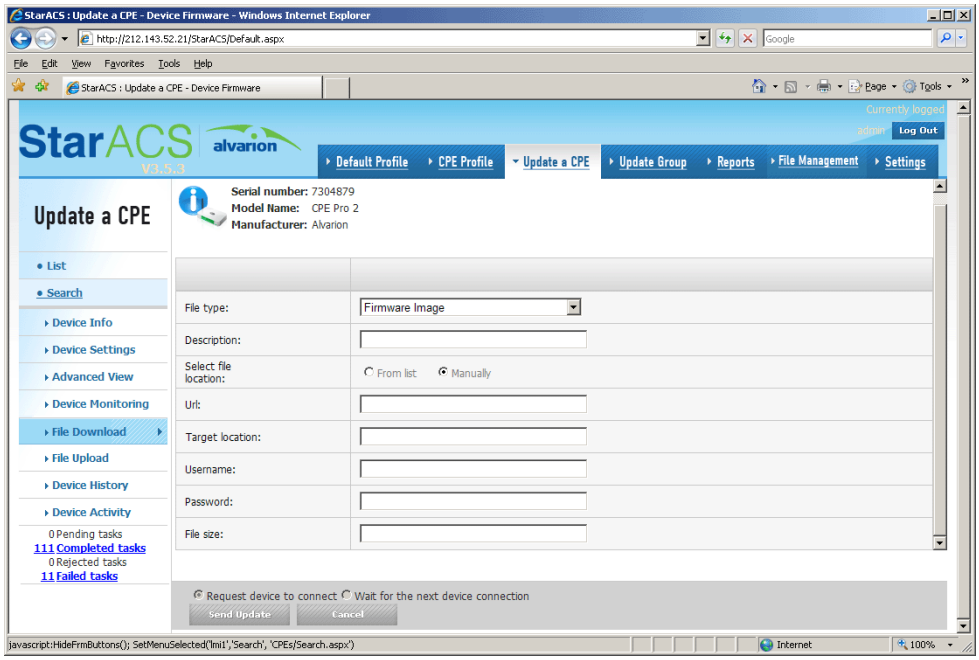


Figure 51: Manual File Selection

a Enter the URL from which the file is downloaded (the values are CPE dependent).

b Enter a Description (optional).

- If you chose Restore (Vendor configuration file only), the following page is displayed:

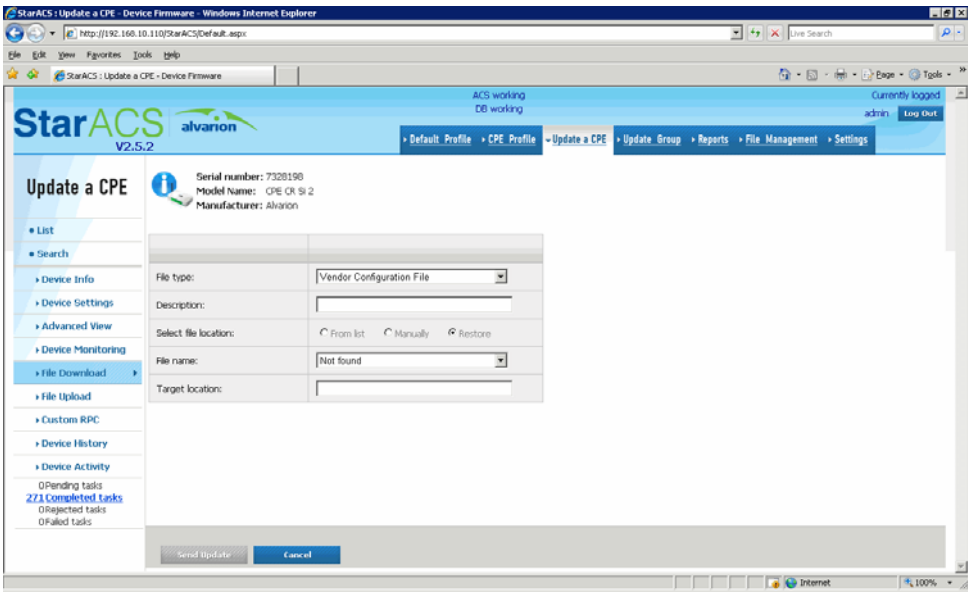


Figure 52: Restore Vendor Configuration File

a Select the File name from the list.

b Leave the Target locationfield empty.

4 Click Send Update. The firmware update request is sent.

6.4.7 File Upload

The File Upload page enables uploading CPE vendor files to the file server.

The following fields are available on the File Upload page:

- File Type - selects the type of file. The possible file types are Vendor Configuration File and Vendor Log File (not applicable for all Alvarion CPEs).
- Select target type - select the target destination of the file. The possible values are Default site and Manually enter URL.

The following controls are available on the File Upload page:

- Send Update - sends the file update
- Cancel - cancels the action

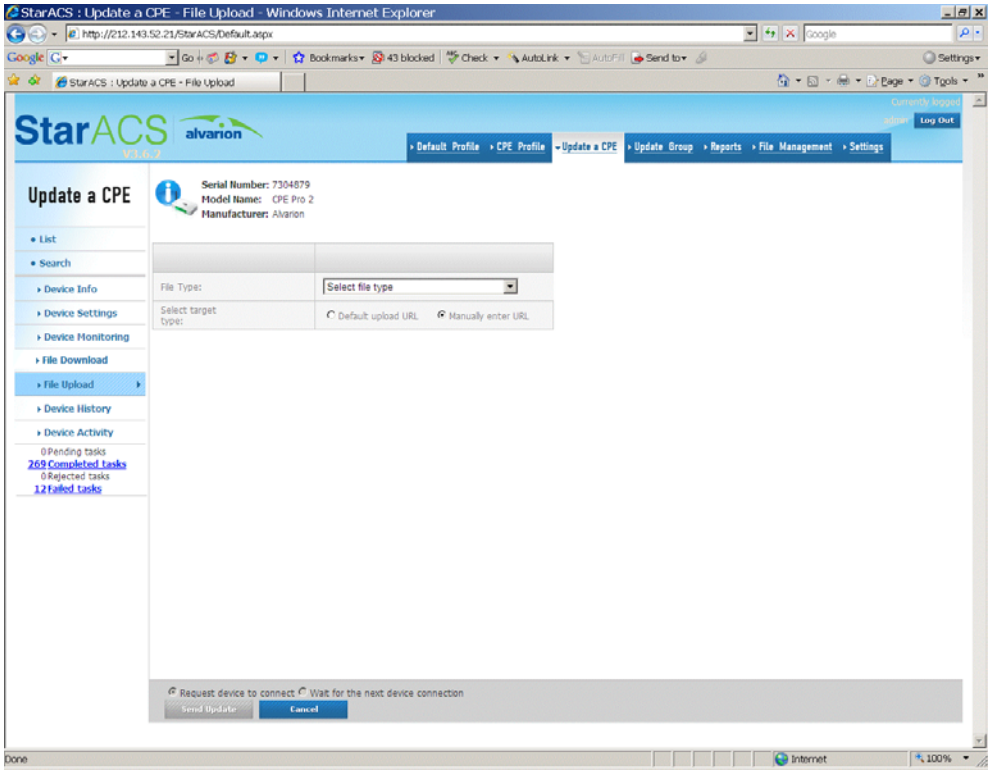


Figure 53: File Upload Page

To upload a file:

1 Select the File type from the list.

2 Modify the following parameters as required:

Table 5: File Upload parameters

Parameter Name	Description	Range
File type	The type of file used for upload	Vendor Configuration File
Description	Description of the current file	Optional Value
Select target type	Select the location to where the file will be uploaded	■ Default Upload URL ■ Manually enter URL
Destination URL	The URL for the file transfer server	CPE dependent value
User Name	User Name for the file transfer server	
Password	Password for the file transfer server	

3 Specify how to find the target destination: Default upload URL or Manually enter URL.

4 Enter the file name.

» If you chose Default upload URL, the following page is displayed:

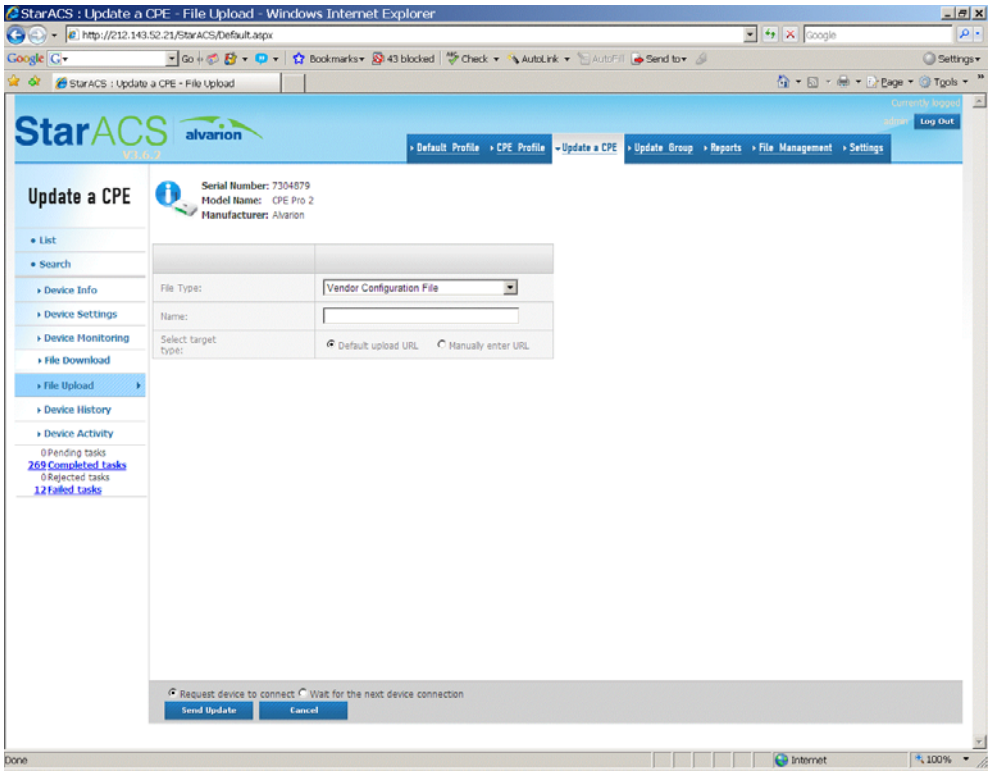


Figure 54: File Upload - Default Site

» If you chose Manually enter URL, the following page is displayed:

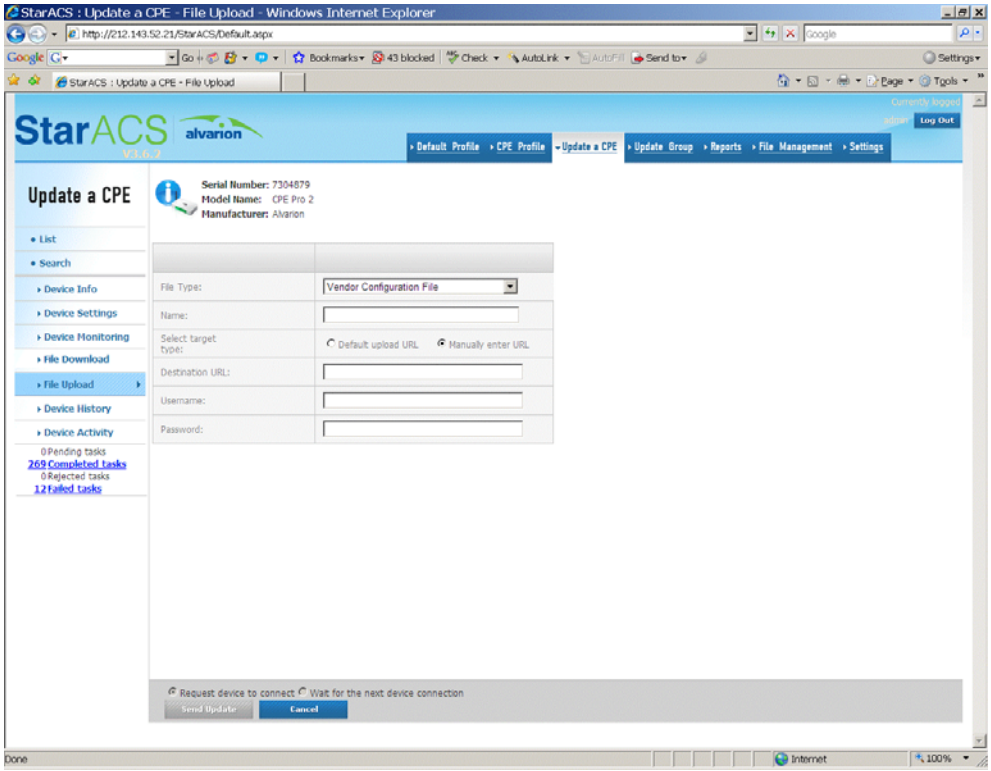


Figure 55: File Upload - Manually Enter URL

a Enter the destination URL (the values are CPE dependent).

5 Click Send Update. The file is uploaded to the target destination.

6.4.8 Custom RPC

The Custom RPC option displays the Custom RPC page. It enables manually configuring commands and sending them to the device. This is useful for debugging CPEs or for sending methods that are not supported by StarACS to the device. All methods supported by the device can be used.

The following fields are available on the Custom RPC page:

- Method name - selects the RPC Method supported by the CPE. The information is retrieved directly from the CPE as a response to the method sent to Get RPC Methods on discovery.
- Request - contains the SOAP message from the SOAP Body element.

The following controls are available on the Custom RPC page:

- Send Update - sends the command to the device

- Cancel - clears the screen without sending the configured information to the device

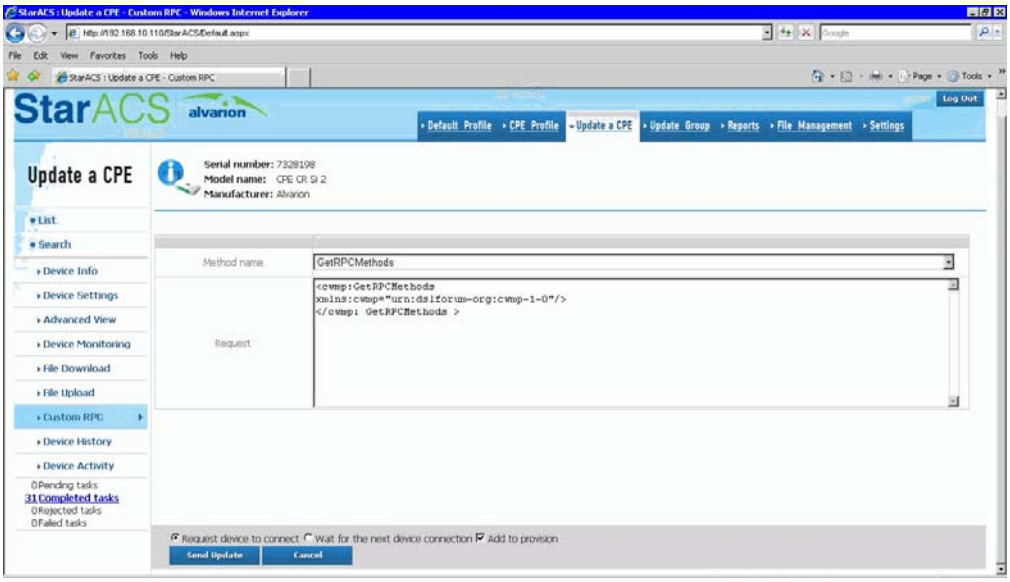


Figure 56: Custom RPC Page

6.4.9 Device History

The Device History option opens the Device History page. The Device History page displays recorded events for the device for 48 hours from the last inform received.

The following fields are available on the Device History page:

- Show all - displays all events
- Show by date - displays events that occurred on a specific date
- Activity Type - select to view only the events of a certain type

The following controls are available on the Device History page:

- Refresh - refreshes the page
- Delete - deletes all the events in the current view
- Save - opens or downloads an xls file with all the events listed

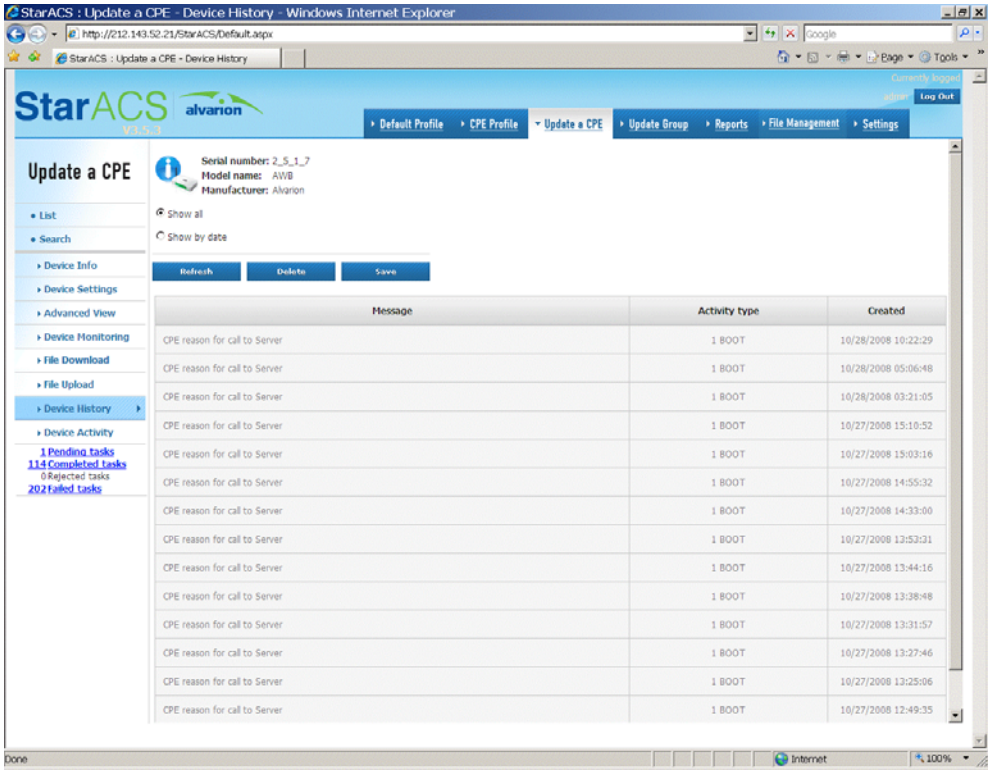


Figure 57: Device History

6.4.10 Device Activity

The Device Activity option opens the Device Activity page, which displays selected tasks for the device executed on specified dates.

The following fields are available on the Device Activity page:

- Show all - displays all tasks
- Show by date - displays tasks that occurred on a specific date
- Task type - selects the task type
- Task method - selects the task method

The following controls are available on the Device Activity page:

- Refresh - refreshes the display
- Delete - deletes selected tasks

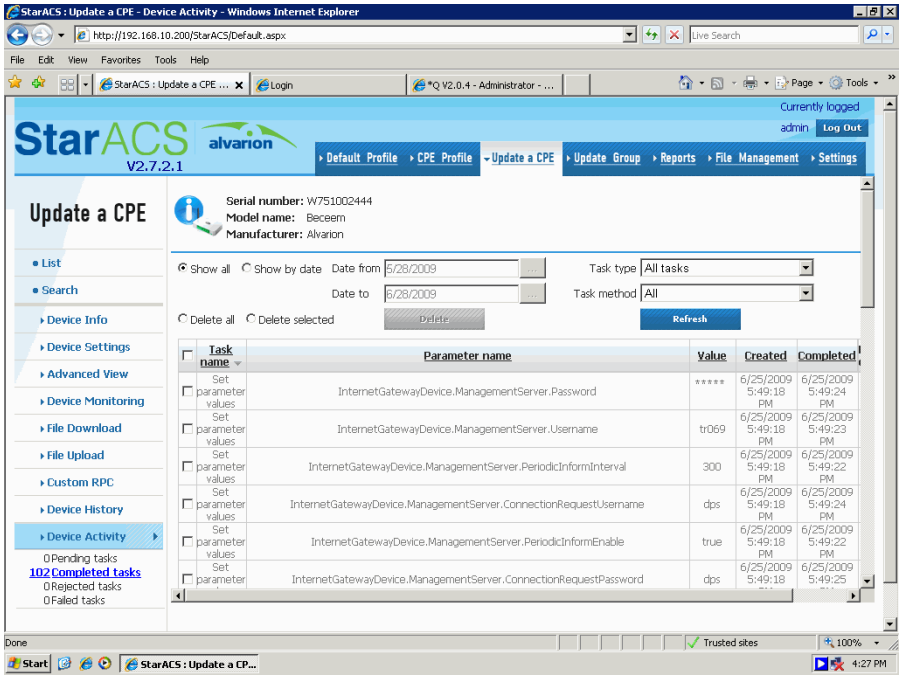


Figure 58: Device Activity

6.4.11 Pending, Completed, Rejected, and Failed Tasks

Shortcut links for displaying pending, completed, rejected, and failed tasks are available directly below the Device Activity menu option. If there is at least one task in the category, a shortcut link is provided. Clicking the link displays the Device Activity page for the specified task type.

For example, clicking the Pending tasks link displays the page below:

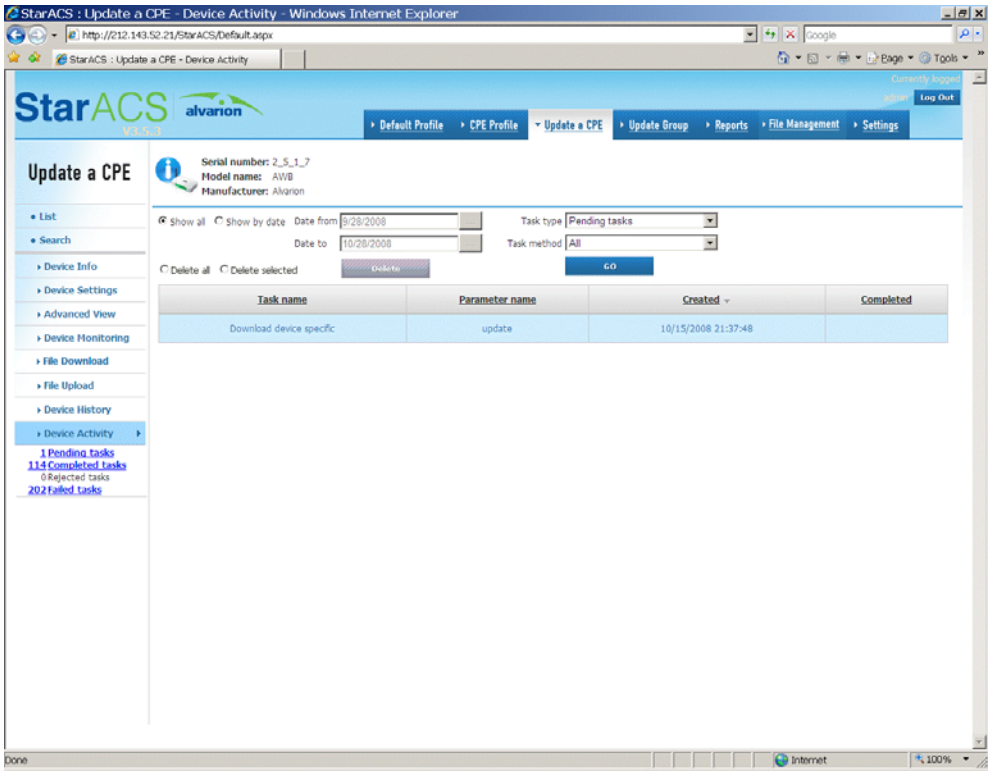


Figure 59: Pending, Completed, Rejected, and Failed Tasks

Failed task entries are color-coded pink. The error code is displayed as a tool tip when the mouse hovers over the failed task (see Table 6).

Table 6: Error Codes

Fault code	Description
TR-069 predefined error codes	
0	No Fault
9000	Method not supported
9001	Request denied (no reason specified)
9002	Internal error
9003	Invalid arguments
9004	Resources exceeded (when used in association with SetParameterValues, this MUST not be used to indicate parameters in error)
9005	Invalid parameter name
9006	Invalid parameter type (associated with SetParameterValues)
9007	Invalid parameter value (associated with SetParameterValues)

Table 6: Error Codes

Fault code	Description
9008	Attempt to set a non-writable parameter (associated with SetParameterValues)
9009	Notification request rejected (associated with SetParameterAttributes method)
9010	Download failure (associated with Download or TransferComplete methods)
9011	Upload failure (associated with Upload or TransferComplete methods)
9012	File transfer server authentication failure (associated with Upload, Download, or TransferComplete methods)
9013	Unsupported protocol for file transfer (associated with Upload and Download methods)
Vendor Specific: File Transfer 9800-9819	
9800	Incorrect File Type parameter
9801	Can not resolve URL of TFTP server
9802	Invalid Target File Name
9803	Invalid File Size
9804	TFTP failed, Corrupted File Format
9805	Configuration File Invalid
9806	MD5 Check Failed
Vendor Specific: AddObjectResponse 9820-9829	
9820	Max services exceeded
9821	Instance Already Exist

7. Updating a Group of CPEs

The Update Group page enables applying parameters to a group of CPE devices of the same manufacturer and model. The Update Group menu enables the following options:

- "Viewing CPE Groups" on page 74
- "Importing a File for Updating a Group" on page 79
- "Creating a New CPE Group" on page 80
- "Defining a Filter Group" on page 83

7.1 Viewing CPE Groups

Click the View menu option to display a table of CPE update groups:

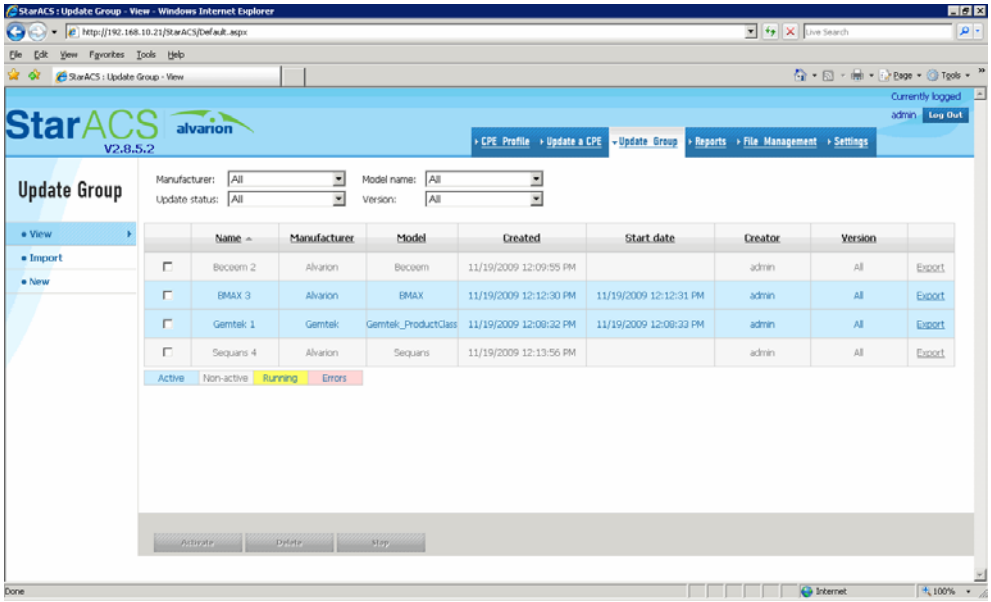


Figure 60: Update Group - View

The table may be filtered by:

- Manufacturer
- Model name

- Update status - the update status of the group profile. The possible values are:
  - All - all groups are displayed (no filtering)
  - Active - CPE groups that are still in the update process are displayed
  - Not active - only non-active groups are displayed
  - Scheduled - pending CPE groups that are scheduled for update in the future are displayed
  - Running - CPE groups that were scheduled and are currently in the update process are displayed
  - Error - groups whose update process failed are displayed

The table displays the following fields:

- Name - CPE update group name
- Manufacturer - CPE manufacturer
- Model - CPE model name
- Created - CPE update group creation date and time
- Start Date - date when group was created
- Creator - username who created the CPE update group
- Version - CPE update group version number

Entries are color-coded as follows:

- Active - blue
- Non-active - gray
- Errors - pink
- Running - yellow

The following actions are available:

- Sort - sorts the table by the selected field
- Edit - edits the selected update group
- Export - exports the selected update group in xml format
- Activate - activates the selected update group
- Delete - deletes the selected update group
- Stop - stops a task that is running

To sort the update group table by a field:

Click the selected field name in the update group table header row. The update group table is sorted by the selected field in ascending order (▲). To sort in descending order (▼), click the selected field name again.

To export an update group:

Click Export for the selected group profile entry in the table. A dialog box prompts if to open or save the profile file in xml format.

To activate an update group:

1. Check the box in the row for the selected group profile entry in the table.
2. Select whether the profile is to be activated immediately by requesting the device to connect or later by waiting for the next device connection.
3. Click Activate. The group profile is activated and the table row is color-coded blue.

NOTE

Once activated, CPE groups can not be deactivated. They remain active for logging purposes and to maintain the polling configuration of specific parameters.

To delete an update group:

1 Check the box in the row for the selected group profile entry in the table.

2 Click Delete. The group profile is deleted.

NOTE

As soon as a CPE group is deleted, the polling that was activated for specific parameters ceases, but the information already collected remains in the device_stats table in the database.

To stop an update group:

1 Check the box in the row for the selected group profile entry in the table.

2 Click Stop. The update for the group is stopped.

NOTE

Only running groups can be stopped.

To edit an update group:

NOTE

Only non-active groups can be edited.

1 Click any field in the row of the selected entry in the table. The group profile parameter table is displayed.

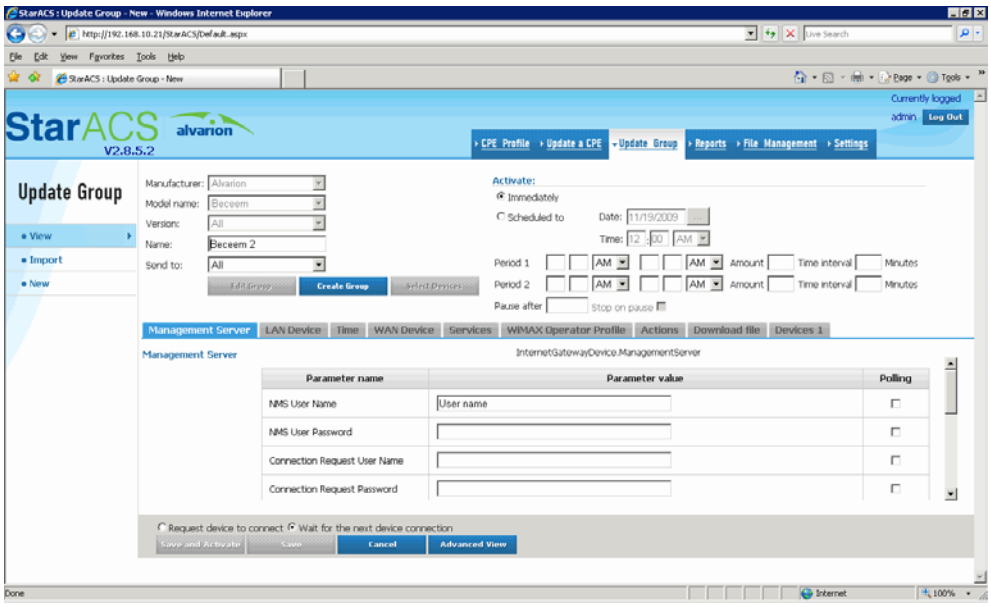


Figure 61: Group Profile Parameter Table

2 Select whether to activate the group profile immediately or schedule its activation at a later date and time.

3 Select the recipients of the file. The possible values are:

- All - sends to all recipients
- Individual - sends to individuals only
- Import from file - sends to recipients listed in the imported file. The file must have the following format:
  <?xml version="1.0"?>
  <Devices>
  <Device>serial_number1</Device>
  <Device>serial_number2</Device>
  </Devices>
- Group Name - all new filtering groups that are created (using the Edit Group or Create Group buttons) are displayed in the drop-down list

NOTE

If Individual or Import from file are selected, the Select Devices option becomes available. This enables to select from all the CPEs in the network or to import a file with a predefined list of CPEs. The list of CPEs is displayed in the **Devices** tab.

4 Enter one or two time periods for CPE updates (optional). This feature enables selecting a specific time interval every day, in which to perform the update.

5 Enter the number of CPEs to be updated in the Amount field and the time interval (in minutes) between updates for the particular period.

6 Enter the number of devices after which testing should be paused in the Pause after field. For example; if you want to test a new update group on only 10 devices, enter 10 in the Pause after field. The update will stop after updating the first 10 devices once only. If the Stop on pause field is checked, the update will pause each time after updating 10 devices.

7 Click the parameter group tab (Management Server, etc.).

8 Edit the parameter values.

9 To periodically sample the selected parameter, check the Polling box. The information is stored in the device_stats table in the database.

10 To manually configure commands for a group of CPEs, click the Actions tab. The controls that can be configured are device specific and differ for the different devices. Refer to Table 3 for information about the controls that are available for each type of device.

11 To send the files to the CPE, click Download file.

12 To view the entire parameter-tree, click Advanced View.

13 Select whether to activate the update group actively or passively by choosing Request device to connect or Wait for the next device connection.

14 To save the profile without activating it, click Save. To save the profile and activate it, click Save and Activate. The update group is saved. If activated, the table row is color-coded blue.

NOTE

The **Device 'x'** group parameter tab shows the list of CPEs to which the group applies and the update status for each of the CPEs in the group. The 'x' indicates the number of CPEs in the group. For example; if there are 10 CPEs in the group, the tab will be called Device 10.

7.2 Importing a File for Updating a Group

To import an update file :

1 Click the Import menu option to import an update group. The following page is displayed:

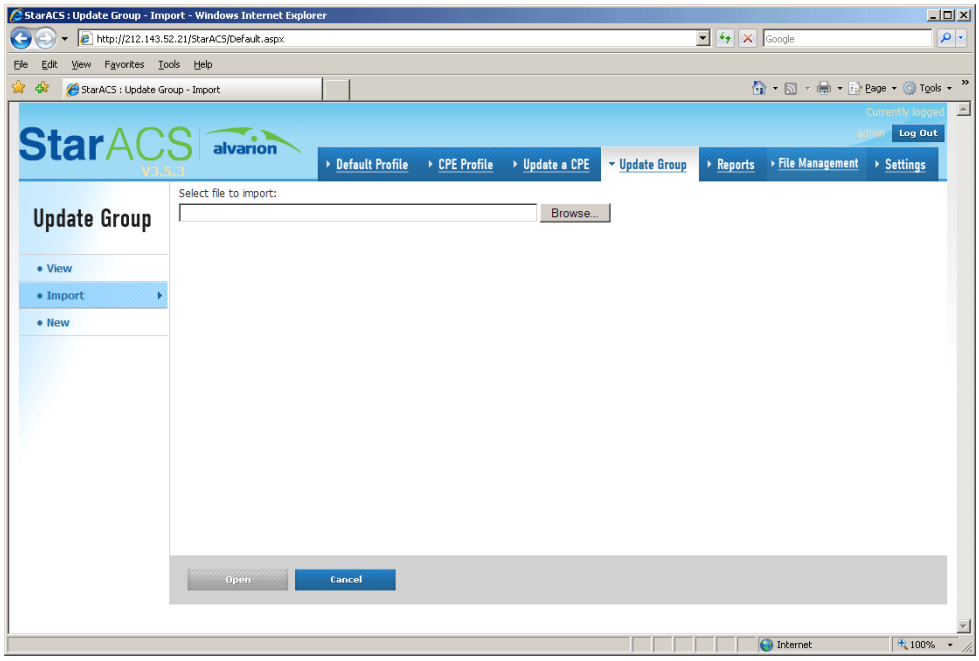


Figure 62: Update Group - Import

2 Enter the file name or click Browse to select the file to import.

3 Click Open. The imported group parameters are displayed.

7.3 Creating a New CPE Group

To create a new CPE group you need to first create a template for the CPE model.

To create a new group:

1 Click the New menu option. The following page is displayed:

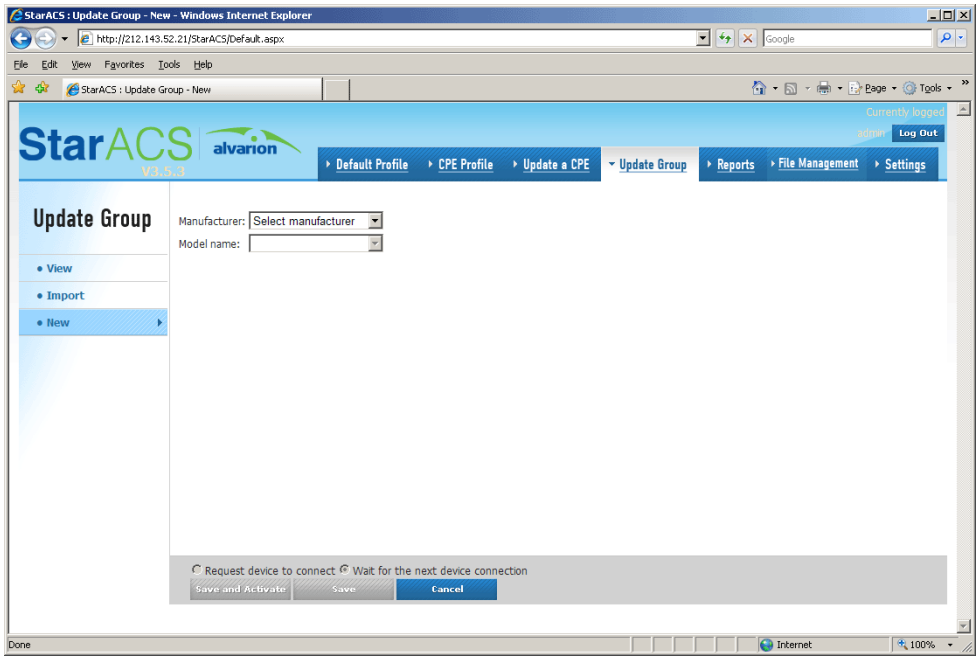


Figure 63: Create a New Update Group - 1

2 Select the Manufacturer and Model name. The following page is displayed:

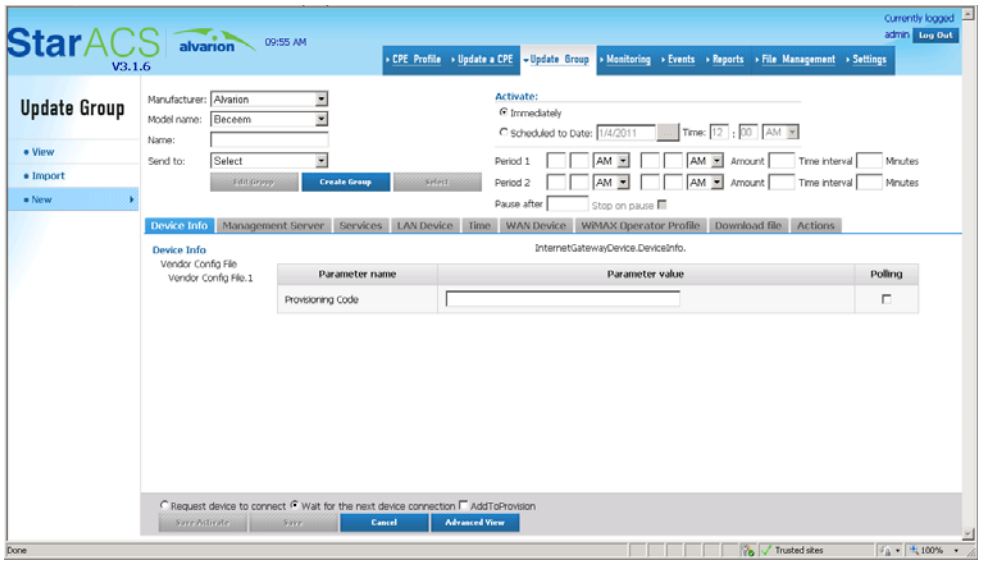


Figure 64: Create a New Update Group - 2

3 Enter a name for the group.

4 Select whether to activate the group profile immediately or schedule its activation at a later date and time.

5 Select the recipients of the file. The possible values are:

- All - sends to all CPEs matching the selected manufacturer and model name
- Individuals - sends to individual CPEs that are chosen from the list of CPEs matching the selected manufacturer and model name
- Import from file - sends to recipients listed in the imported file. The file must have the following format:
  <?xml version="1.0"?>
  <Devices>
  <Device>serial_number1</Device>
  <Device>serial_number2</Device>
  </Devices>
- Group Name - all new filtering groups that have already been created and defined (using the Edit Group or Create Group buttons) are displayed in the drop-down list (see Section 7.4 for details on creating a filter group)

6 Enter one or two time periods for CPE updates (optional).

7 Enter the number of CPEs to be updated in the Amount field and the time interval (in minutes) between updates for the particular period .

8 Enter the number of devices after which testing should be paused in the Pause after field. For example; if you want to test a new update group on only 10 devices, enter 10 in the Pause after field. The update will stop after updating 10 devices once only. If the Stop on pause field is checked, the update will pause each time after updating 10 devices.

9 Click the parameter group tab (Management Server, etc.).

10 Edit the parameter values.

11 To periodically sample the selected parameter, check the Polling box. The information is stored in the device_stats table in the database.

12 To manually configure commands for a group of CPEs, click the Actions tab. The controls that can be configured are device specific and differ for the different devices. Refer to Table 4 for information about the controls that are available for each type of device.

13 To send the files to the CPE, click Download file.

14 To view the entire parameter-tree, click Advanced View.

15 Set the order in which the rows should be sorted and click Finish. The selected parameters will be displayed in the list of groups.

16 Select whether to activate the update group actively or passively by choosing Request device to connect or Wait for the next device connection.

17 To save the profile without activating it, click Save. To save the profile and activate it, click Save and Activate. The update group is saved and the name of the group appears in the list of recipients who can receive the file . If activated, the table row is color-coded blue.

7.4 Defining a Filter Group

1 Click Create group. The Create new group page is displayed.

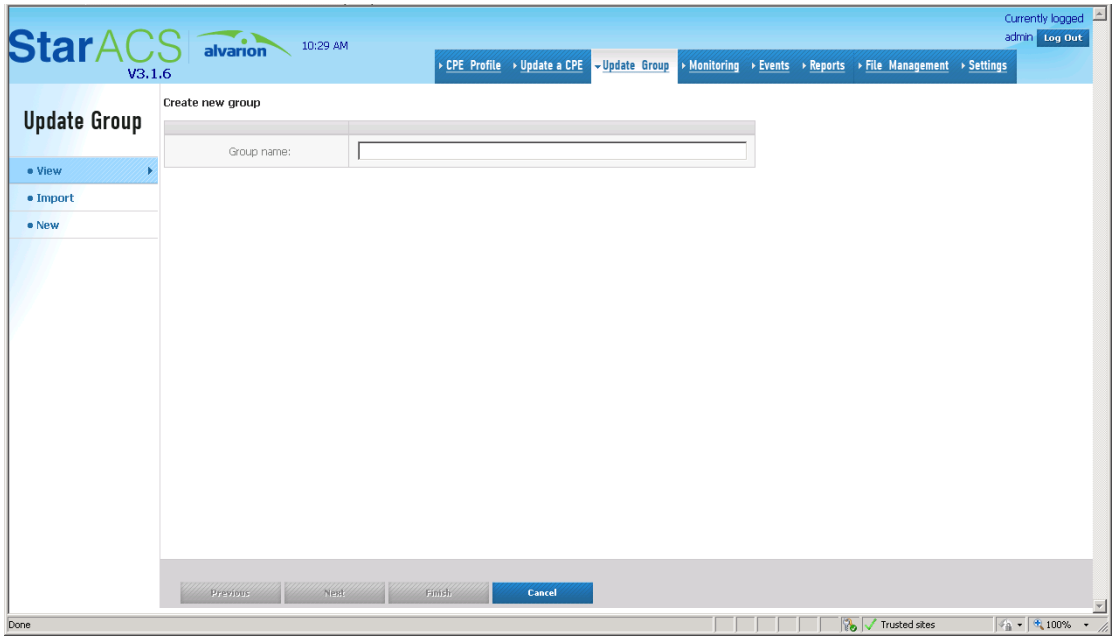


Figure 65: Create a New Filter Group - 1

2 Enter a name for the group and click Next. The Filter records page is displayed.

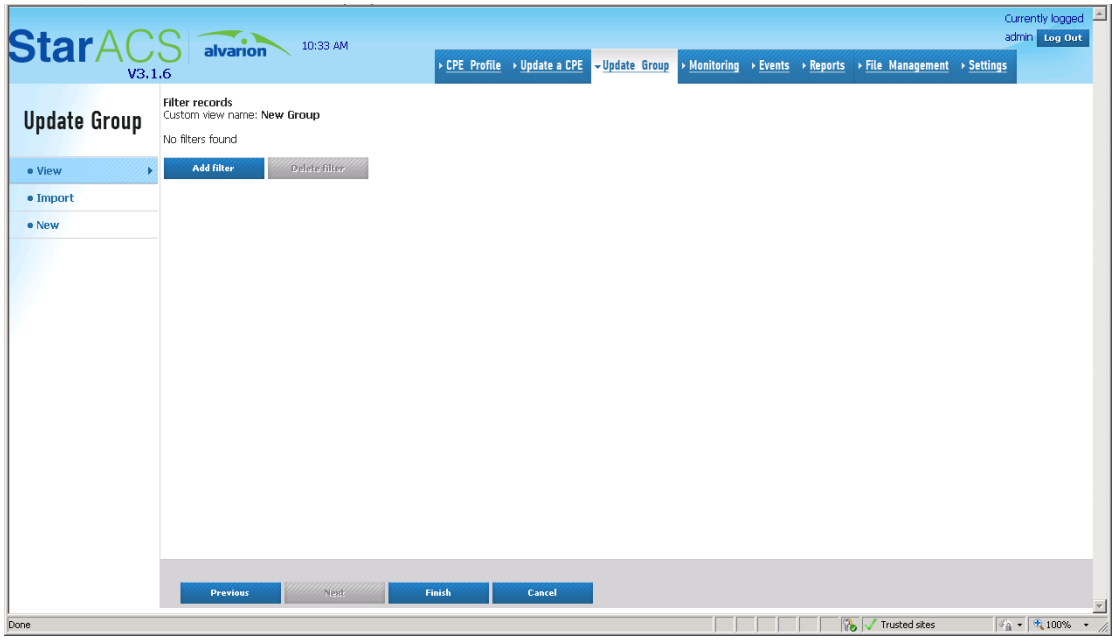


Figure 66: Create a New Filter Group - 2

3 Click Add Filter to add filters and click Next. The Set Filter page is displayed.

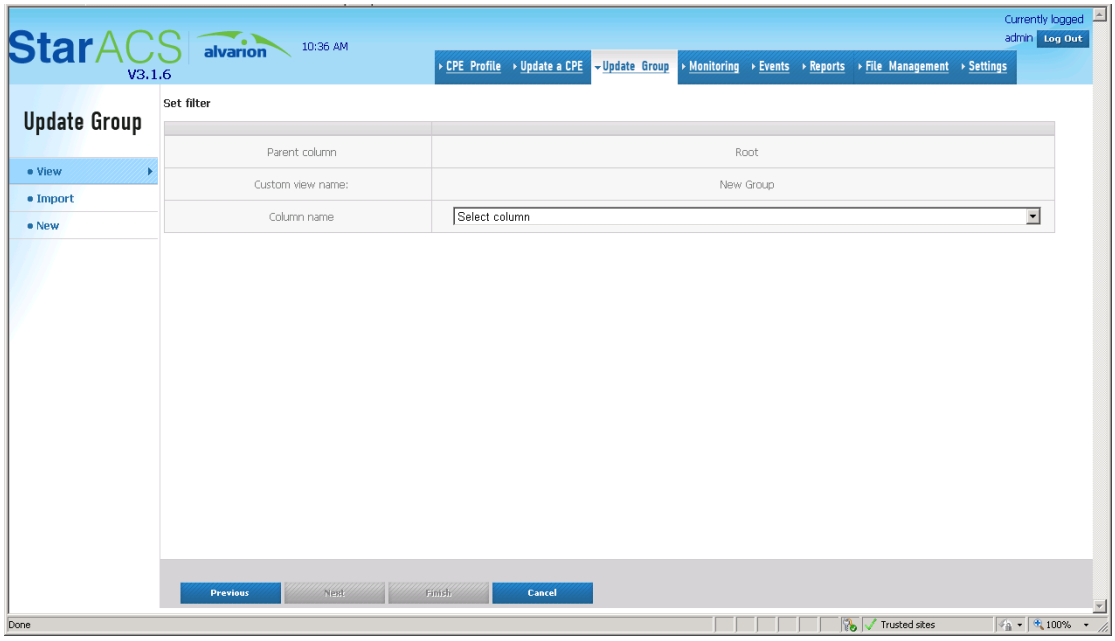


Figure 67: Create a New Filter Group - 3

4 Enter filter criteria:

a In the Column name field, select a criterion from the drop down list; for example, IP Address. The Compare field opens.

b In the Compare field, select a delimiter (the available delimiters depend on the selected criterion):

- None: use to match an empty field for the selected criterion (in the example, CPEs with no IP Address)
- = : use to match an exact string for the selected criterion (in the example, a full IP Address: 192.168.1.2)
- != : use to match strings that are different from the specified string
- Like: use to match a string anywhere in the selected criterion (in the example, IP Addresses containing 68)
- No Like: use to match string that do not contain the specified string anywhere in the selected criterion (in the example, IP Addresses not containing 68)
- Is null: use to match an empty field for the specified criterion
- Is not null: use to match any field for the specified criterion that is not empty.
- Starts with: use to match a string matching exactly the beginning of the selected criterion (in the example, the beginning of the IP Address: 192.168)
- The Created/Updated criteria fields include additional options relating to the date of creation/update:
  - On day - use to specify a specific creation/update date and optionally time of day
  - Prior to - use to specify any date before the selected date and optionally time of day
  - Later than - use to specify any date after the selected date and optionally time of day
  - Today - use to specify today's date
  - Before today - use to specify any date before today
  - Yesterday - use to specify yesterday as the creation/update date

- Prev 7 days - use to specify the creation/update day in the last 7 days (excluding today)
- Prev X days - use to specify the creation/update day in the last X days (where X is any number, excluding today)

c In the Input text field, enter the string to match the required criterion.

d Click Next. The new filter criterion is displayed.

e Add more filter criteria as necessary by repeating steps 3 and 4. Include the And/Or logic.

f When all filter criteria are set, click Finish.

5 You can select the filter group in the Send to field.

8. Monitoring

The Monitoring page enables monitoring events that show the state of the CPE and/or selected parameters. The Monitoring menu enables the following options:

- "Viewing Events" on page 87
- "Importing an Event Monitoring File" on page 92
- "Creating a New Event" on page 94
- "Viewing an Event Log" on page 96

8.1 Viewing Events

Click the View menu option to display a table of events that are being monitored:

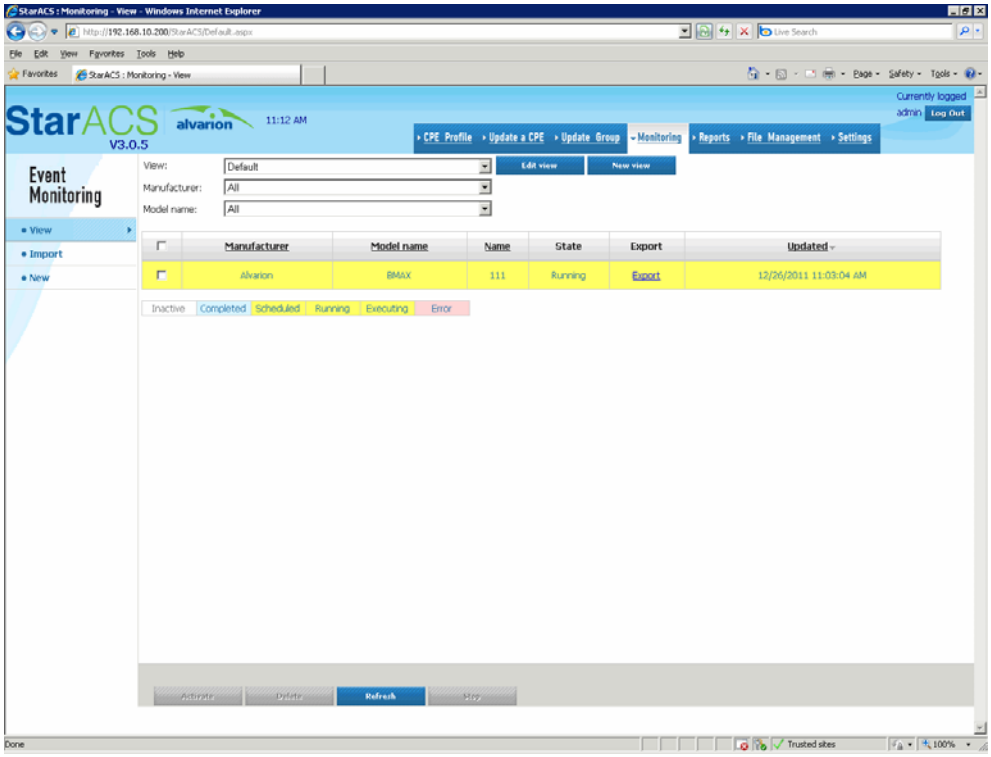


Figure 68: Monitoring - View

The table may be sorted by:

- Manufacturer

- Model name
- Name
- State
- Updated

The table displays the following fields:

- Manufacturer - CPE manufacturer
- Model name - CPE model name
- Name - the name of the event
- State - the state of the event. The possible values are:
  - Inactive
  - Completed
  - Scheduled
  - Running
  - Executing
  - Error
- Export - exports the selected event in xml format
- Updated - the date that the event was last updated

Entries are color-coded as follows:

- Active - blue
- Non-active - gray
- Errors - pink
- Running/Scheduled/Executing - yellow

The following actions are available:

- Activate - activates the selected event
- Delete - deletes the selected event
- Refresh - refreshes the current view
- Stop - stops a task that is running

To sort the events by a field:

Click the selected field name in the Event Monitoring table header row. The Event Monitoring table is sorted by the selected field in ascending order (▲). To sort in descending order (▼), click the selected field name again.

To export an event:

Click Export for the selected event entry in the table. A dialog box prompts if to open or save the profile file in xml format.

To activate an event:

1. Check the box in the row for the selected event entry in the table.
2. Select whether the event is to be activated immediately by requesting the device to connect or later by waiting for the next device connection.
3. Click Activate. The group profile is activated and the table row is color-coded blue.

To delete an event:

1. Check the box in the row for the selected event entry in the table.
2. Click Delete. The group profile is deleted.

To stop an event:

1 Check the box in the row for the selected event entry in the table.

2 Click Stop. The update for the event is stopped.

NOTE

Only running, scheduled or executing events can be stopped.

To edit an event:

NOTE

Only inactive events can be edited.

1 Click any field in the row of the selected entry in the table. The event parameter table is displayed.

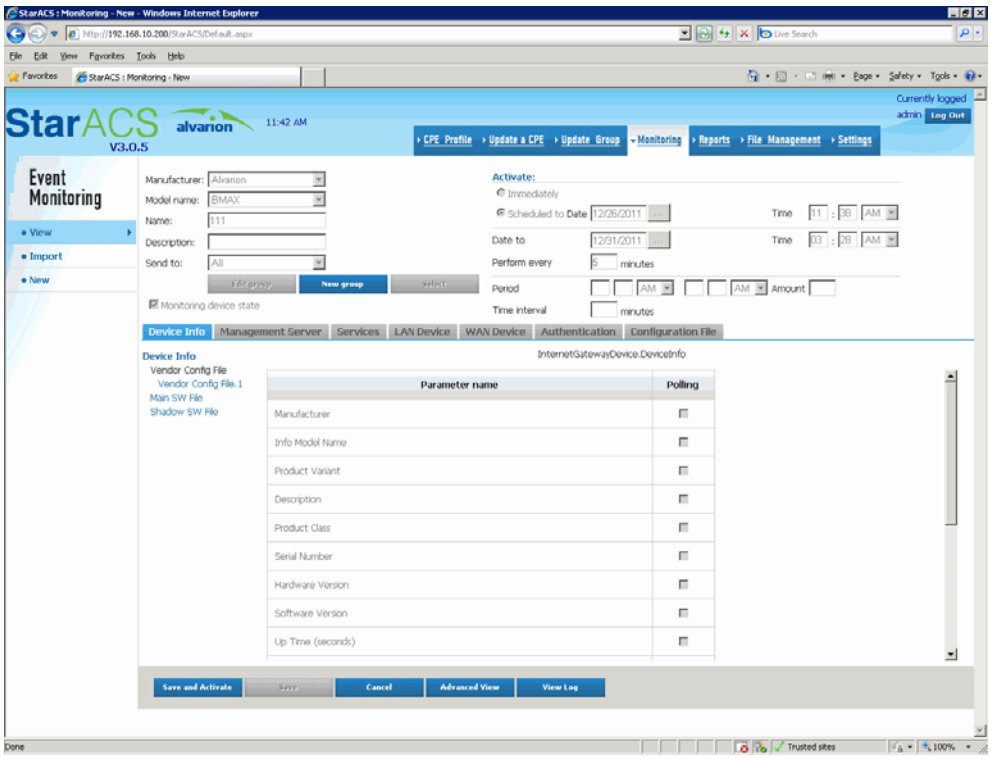


Figure 69: Event Parameters Table

2 Check the Monitoring Device State box to enable monitoring of the state of the CPE. This has the same functionality as the Recheck Status button in Device info, but from this table, it can be applied to multiple CPEs. Click the View Log button to view the results once the event has started.

3 Select whether to activate the event immediately or schedule its activation at a later date and time.

4 Select the devices that will be affected by this event. The possible values are:

- All - sends to all devices affected by the event
- Individual - sends to an individual device affected by the event
- Import from file - sends to the devices listed in the imported file. The file must have the following format:
  <?xml version="1.0"?>
  <Devices>
  <Device>serial_number</Device>

<Device>serial_number</Device>
</Devices>

» Group Name - all new filtering groups that are created (using the Edit Group or Create Group buttons) are displayed in the drop-down list (see Section 7.4 for details on creating a filter group)

NOTE

If Individual or Import from file are selected, the Select option becomes available. This enables to select from all the CPEs in the network or to import a file with a predefined list of CPEs. The list of CPEs is displayed in the **Devices** tab.

5 Enter the Date and Time until which the event will be active and the interval (in minutes) that the event will be performed.

6 Enter a time period for which the event will be monitored. This enables monitoring the devices only between certain hours during the day.

7 Enter the number of CPEs to be monitored in the Amount field and the time interval (in minutes) between updates for the particular period.

8 Click the parameter group tab (Management Server, etc.).

9 To periodically sample the selected parameter, check the Polling box. Click the View Log button to view the results once the event has started.

10 To view the entire parameter-tree, click Advanced View.

11 To save the profile without activating it, click Save. To save the profile and activate it, click Save and Activate. The event is saved. If activated, the table row is color-coded blue.

8.2 Importing an Event Monitoring File

To import an event monitoring file :

1 Click the Import menu option. The following page is displayed:

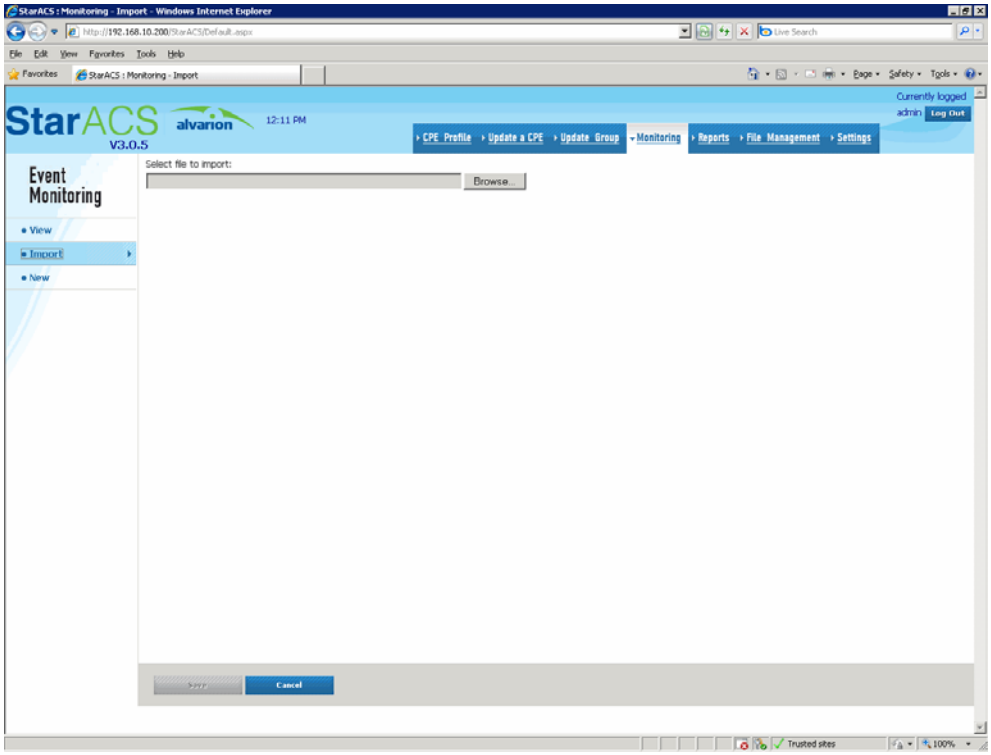


Figure 70: Event Monitoring - Import

2 Enter the file name or click Browse to select the file to import.

3 Click Open. The imported group parameters are displayed.

8.3 Creating a New Event

To create a new event:

1 Click the New menu option. The following page is displayed:

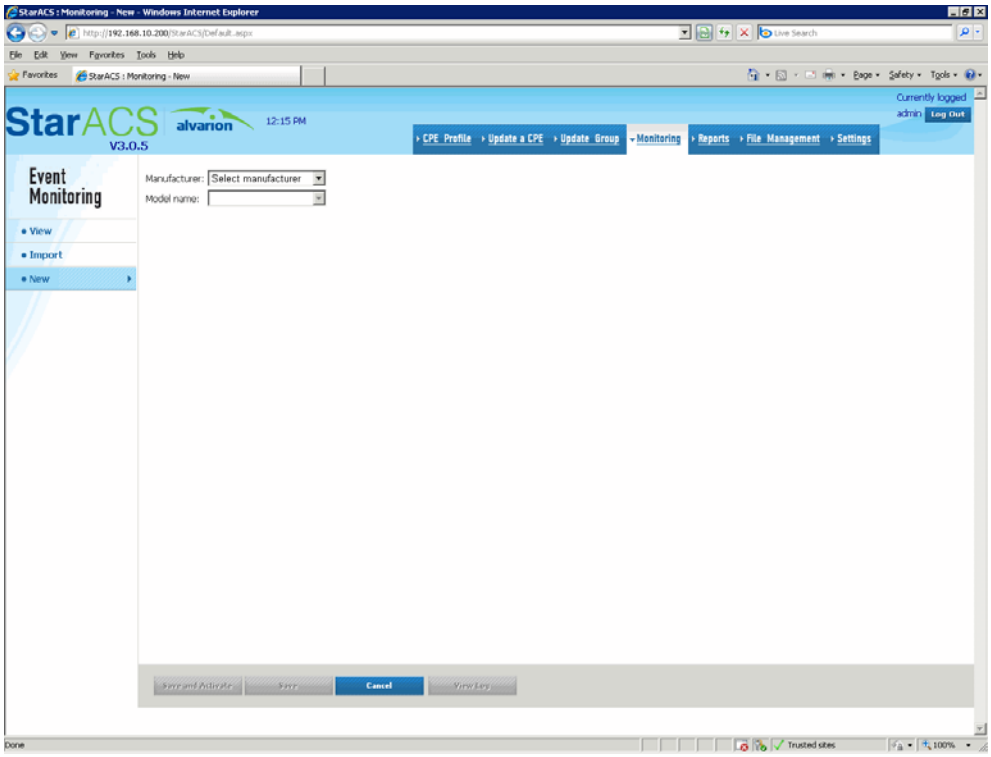


Figure 71: Create a New Event - 1

2 Select the Manufacturer and Model name. The following page is displayed:

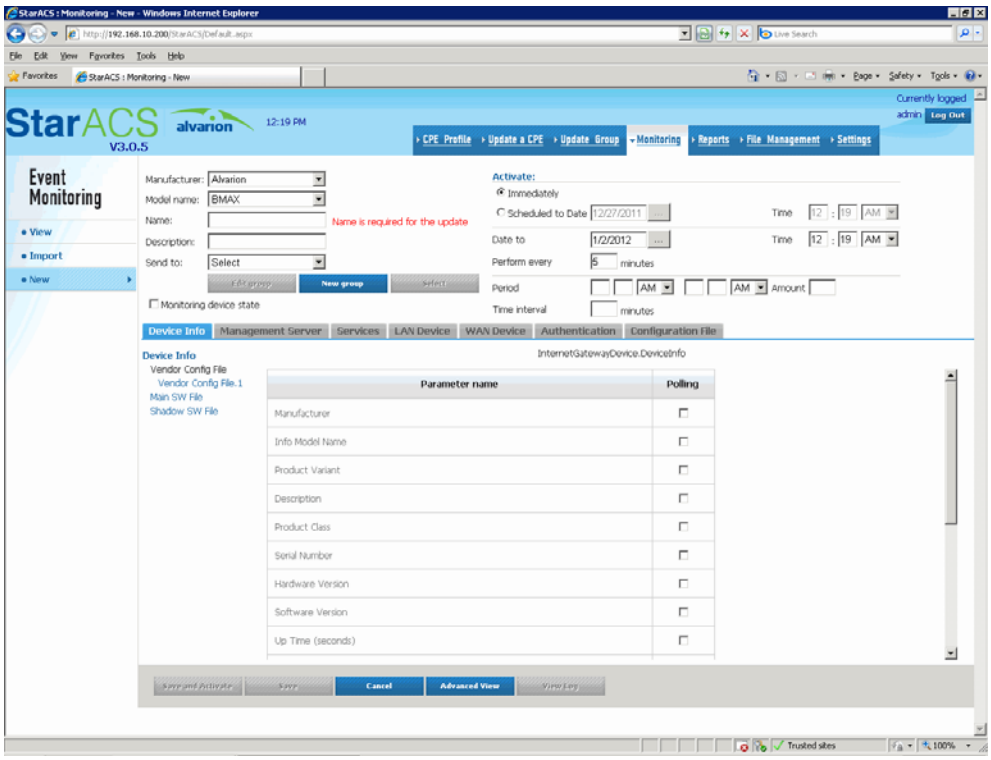


Figure 72: Create a New Event - 2

3 Enter a name and description for the event.Check the Monitoring Device State box to enable monitoring of the state of the CPE. This has the same functionality as the Recheck Status button in Device info, but from this table, it can be applied to multiple CPEs. Click the View Log button to view the results once the event has started.

4 Select whether to activate the event immediately or schedule its activation at a later date and time.

5 Select the devices that will be affected by this event. The possible values are:

- All - sends to all devices affected by the event
- Individual - sends to an individual device affected by the event
- Import from file - sends to the devices listed in the imported file. The file must have the following format:
  <?xml version="1.0"?>
  <Devices>
  <Device>serial_number</Device>

<Device>serial_number</Device>
</Devices>

» Group Name - all new filtering groups that are created (using the Edit Group or Create Group buttons) are displayed in the drop-down list (see Section 7.4 for details on creating a filter group)

NOTE

If Individual or Import from file are selected, the Select option becomes available. This enables to select from all the CPEs in the network or a import a file with a predefined list of CPEs. The list of CPEs is displayed in the **Devices** tab.

6 Enter the Date and Time that the event will be active and the interval (in minutes) that the event will be performed.

7 Enter a time period for which the event will be monitored. This enables monitoring the devices only between certain hours during the day.

8 Enter the number of CPEs to be monitored in the Amount field and the time interval (in minutes) between updates for the particular period.

9 Click the parameter group tab (Management Server, etc.).

10 Edit the parameter values. All parameters for the device are visible.

11 To periodically sample the selected parameter, check the Polling box. Click the View Log button to view the results once the event has started.

12 To view the entire parameter-tree, click Advanced View.

13 Click New group to create a new filter group. (see Section 7.4 for details on creating a filter group).

14 To save the profile without activating it, click Save. To save the profile and activate it, click Save and Activate. The event is saved. If activated, the table row is color-coded blue.

8.4 Viewing an Event Log

Once a monitoring task starts, it is possible to view the status of the task over a period of time. The log displays the status of the CPEs (online/offline) or/and parameters values depending on what was selected when creating the Event,

To view an event log:

1 Select the event from the Event Monitoring table.

2 Click the View Log button at the bottom of the event page. The following page is displayed:

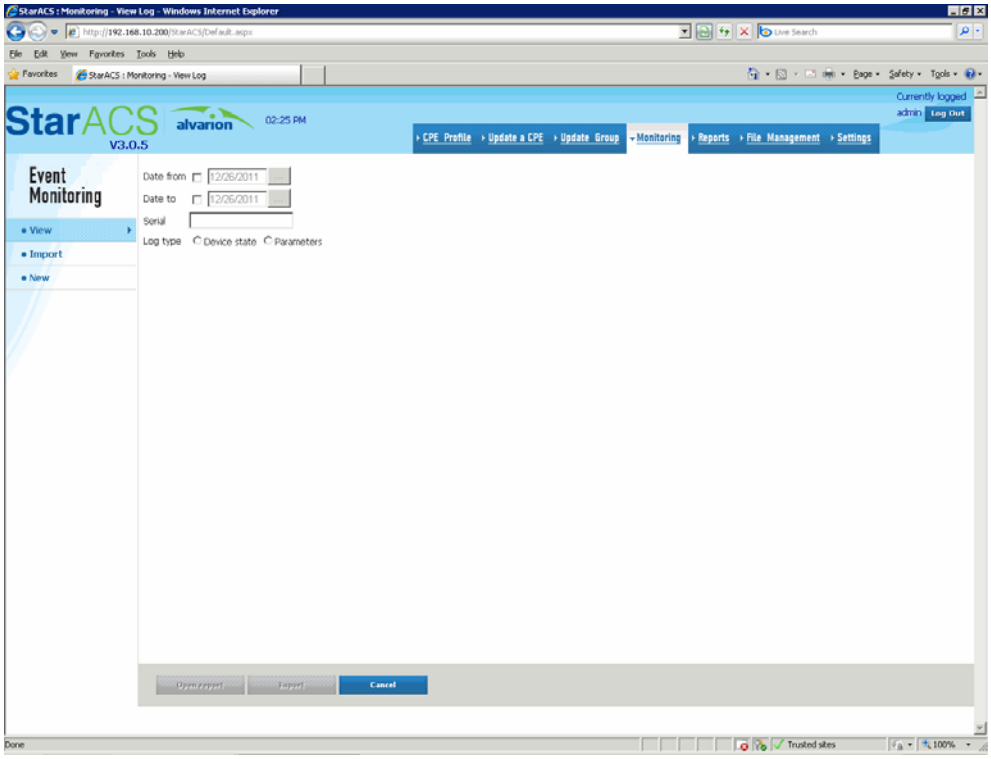


Figure 73: View Log

3 Enter the dates for which you want to view the event log.

4 Select the type of log. It is possible to view a log showing the state of the device or for a parameter.

5 Click Open report to view the events over the time period specified or click Export to export the results to a .csv file.

9. Events

The Events page enables defining, viewing and handling of events. Events are triggers that can be sent to external systems when the configured conditions are met. The Events menu enables the following options:

- "Viewing Events" on page 98
- "Importing an Event File" on page 102
- "Creating a New Event" on page 104

9.1 Viewing Events

Click the View menu option to display a table of events.

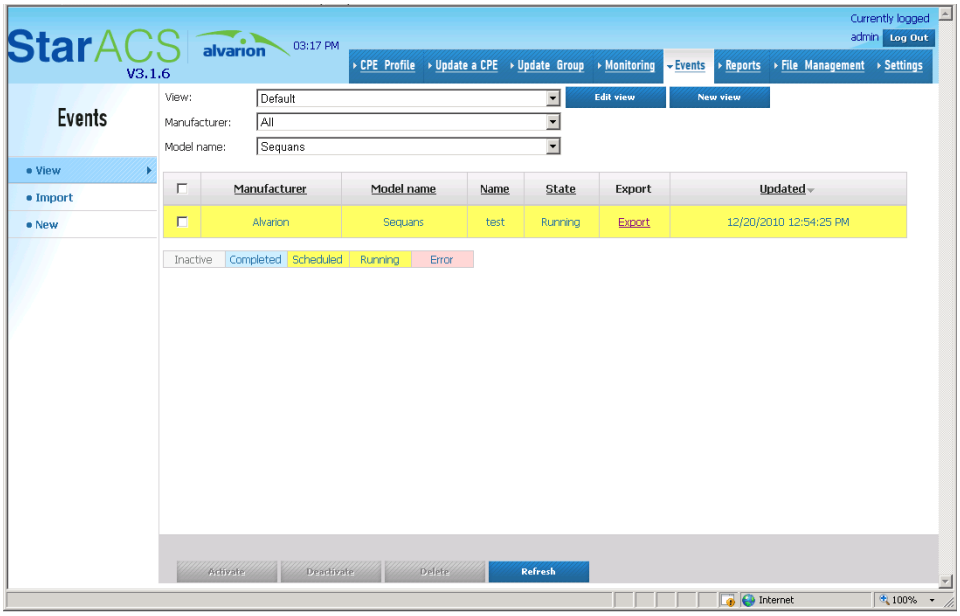


Figure 74: Events - View

The table may be sorted by:

- Manufacturer
- Model name

The table displays the following fields:

- Manufacturer - CPE manufacturer
- Model name - CPE model name
- Name - the name of the event
- State - the state of the event. The possible values are:
  - Inactive
  - Completed
  - Scheduled
  - Running
  - Error
- Export - exports the selected event in xml format
- Updated - the date and time that the event was last updated

Entries are color-coded as follows:

- Inactive - white
- Completed - blue
- Running/Scheduled - yellow
- Errors - pink

The following actions are available:

- Sort - sorts the table by the selected field
- Edit view - edits the selected view
- New view – creates a custom view
- Activate - activates the selected event
- Deactivate - deactivates the selected event

- Delete - deletes the selected event
- Refresh - refreshes the display
- Stop - stops a task that is running

To sort the events by a field:

Click the selected field name in the Event table header row. The Event table is sorted by the selected field in ascending order (▲). To sort in descending order (▼), click the selected field name again.

To create a custom view:

Follow the instructions is Section 6.2 “To edit the view of the CPE list:” on page 48 and “To create a new view of the CPE list:” on page 49.

To export an event:

Click Export for the selected event entry in the table. A dialog box prompts if to open or save the profile file in xml format.

To activate an event:

1. Check the box in the row for the selected event entry in the table.
2. Click Activate. The group profile is activated and the table row is color-coded yellow.

To delete an event:

1. Check the box in the row for the selected event entry in the table.
2. Click Delete. The group profile is deleted.

To edit an event:

NOTE

Only inactive events can be edited.

1 Click any field in the row of the selected entry in the table. The event parameter table is displayed.

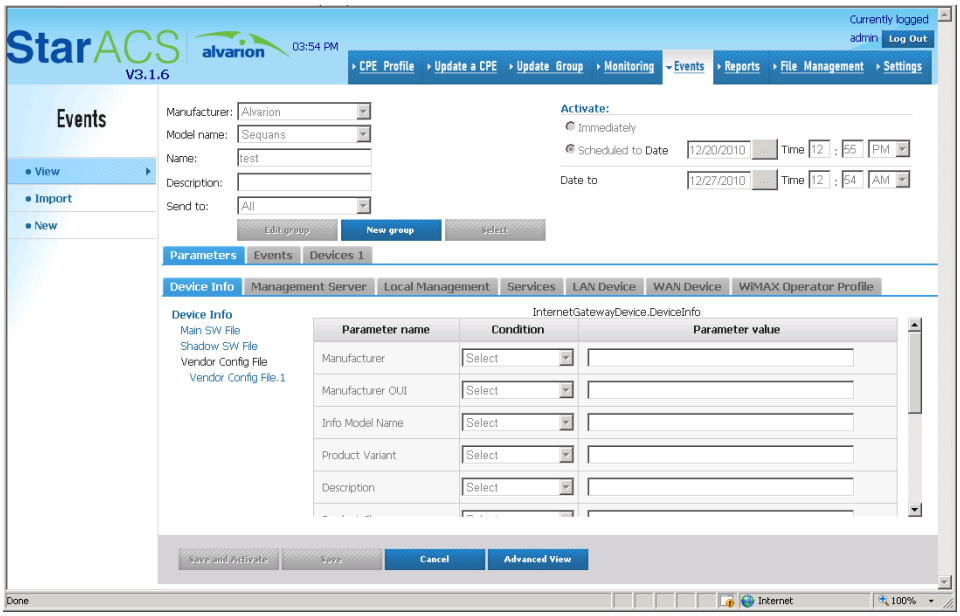


Figure 75: Event Parameters Table

2 Edit the required parameters.

3 Select the devices that will be affected by this event. The possible values are:

» All - sends to all devices affected by the event

» Individual - sends to an individual device affected by the event

» Import from file - sends to the devices listed in the imported file. The file must have the following format:
<?xml version="1.0"?>
<Devices>
<Device>serial_number</Device>

```
 <Device>serial_number</Device>
</Devices>
```

» Group Name - all new filtering groups that are created (using the Edit Group or Create Group buttons) are displayed in the drop-down list (see Section 7.4 for details on creating a filter group)

NOTE

If Individual or Import from file are selected, the Select option becomes available. This enables to select from all the CPEs in the network or to import a file with a predefined list of CPEs. The list of CPEs is displayed in the **Devices** tab.

4 Select when to activate the event by selecting either Immediately or Scheduled to.

5 To view the entire parameter-tree, click Advanced View.

6 To save the profile without activating it, click Save. To save the profile and activate it, click Save and Activate. The event is saved. If activated, the table row is color-coded yellow.

9.2 Importing an Event File

To import an event file:

1 Click the Import menu option. The following page is displayed:

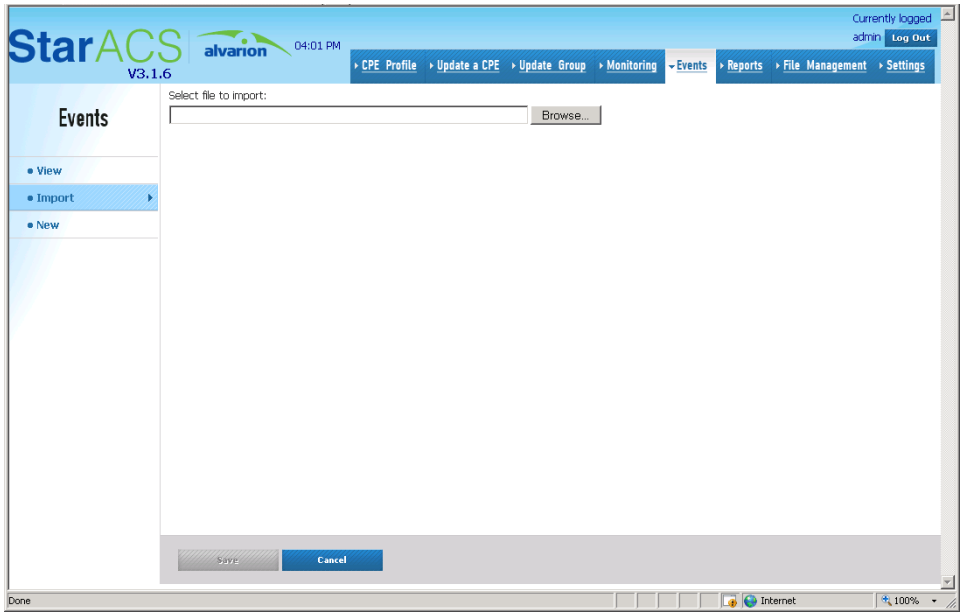


Figure 76: Event Monitoring - Import

2 Enter the file name or click Browse to select the file to import.

3 Click Save. The imported group parameters are displayed.

9.3 Creating a New Event

To create a new event:

1 Click the New menu option. The following window is displayed:

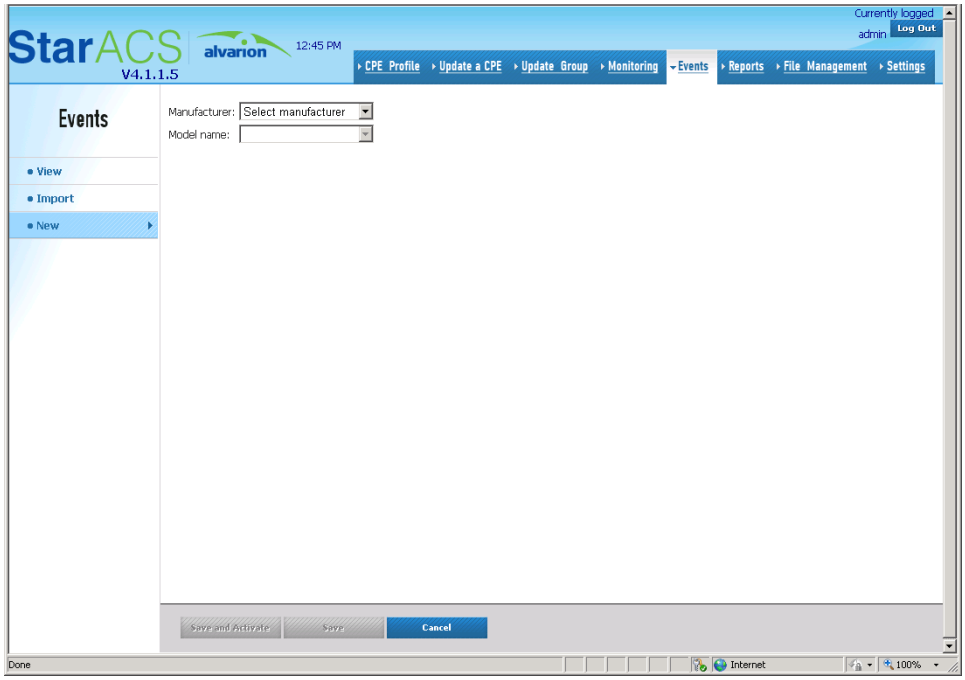


Figure 77: Create a New Event - 1

2 Select the Manufacturer and Model name. The following window is displayed:

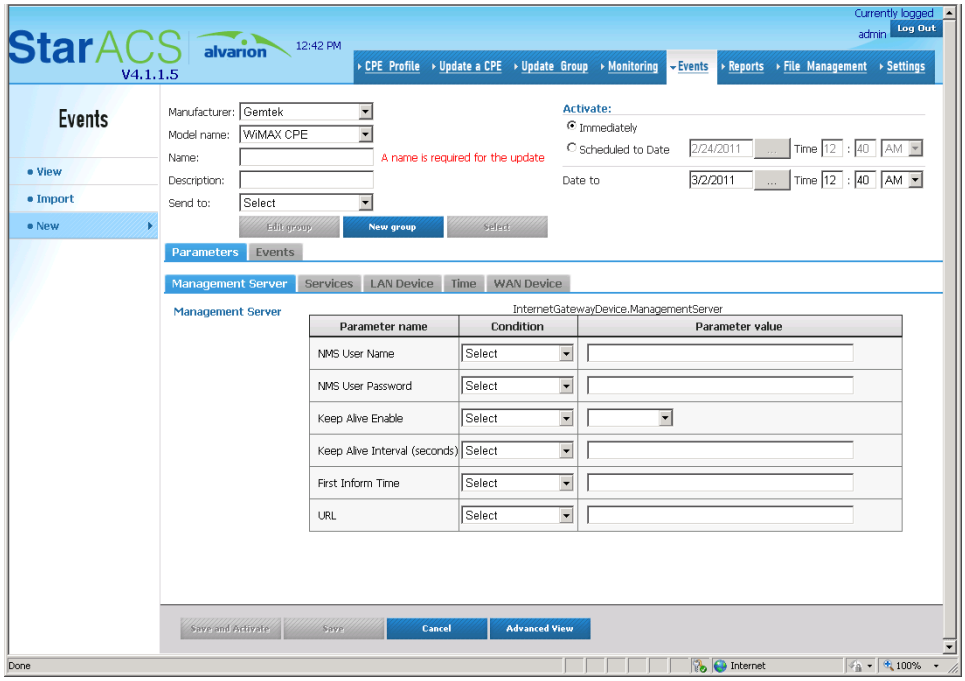


Figure 78: Create a New Event - 2

3 Enter a name and description for the event.

4 From the **Send to** list, select the group to be notified when the event occurs. For details on groups, see Chapter 7.

5 Select whether to activate the event immediately or schedule its activation at a later date and time.

6 Enter the deactivation date and time for the event in the **Date to** field.

7 Select one of the two main tabs: Parameters or Events. Parameters configures events based on CPE specific parameters values and Events configures triggers based on Inform counts.

8 For each desired Parameter name:

a Select the Condition to be applied to it. The possible values are:

- CONTAINS
- EQUAL
- GREATER
- GREATER_EQUAL
- LESS

- LESS_EQUAL
- NOT_EQUAL
- STARTS_WITH
- VALUE_CHANGE.

b Enter the Parameter value to trigger the event.

9 Save the event:

» **Save**: saves the event without activating it

» **Save and Activate**: saves the event and activates it. The table row is color-coded yellow.

10. Reports

Click the Reports tab to display the following options:

- CPE distribution report
- CPE registration report
- Pending tasks
- Rejected tasks
- Activity
- Update reports

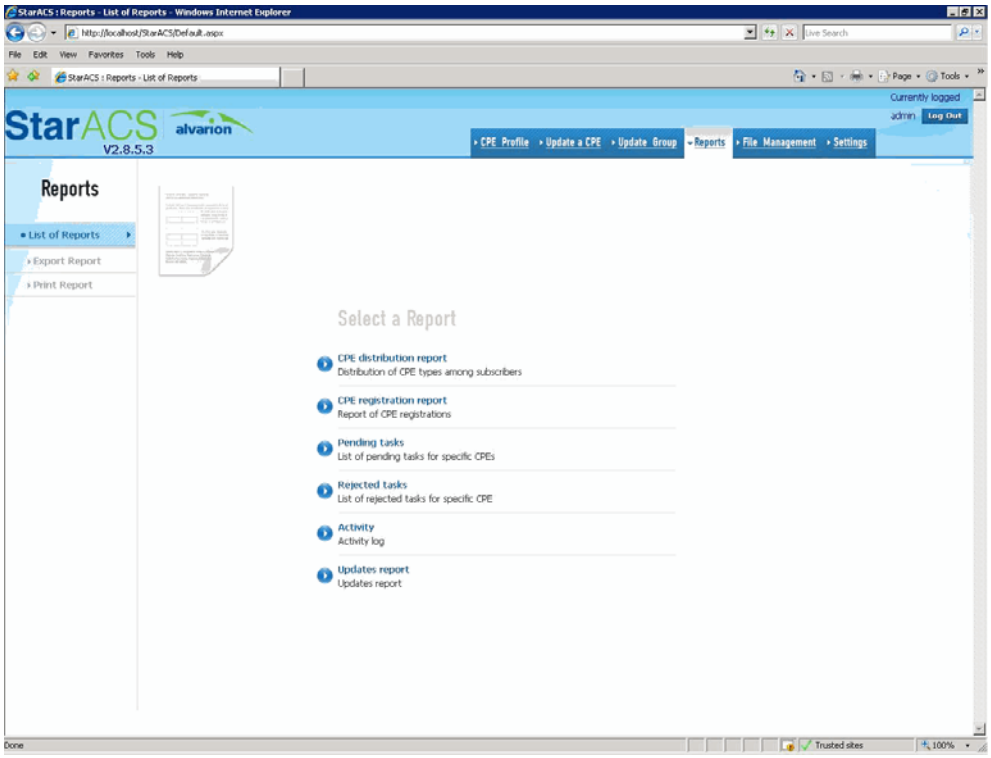


Figure 79: Reports Window

All of the reports can be printed or exported to a table in a spreadsheet.

To print a report:

From the report, click Print Report. A print dialog opens, enabling you to print the report table.

To export a report:

From the report, click Export Report. A dialog opens, enabling you to open or save the table as an Excel spreadsheet.

10.1 CPE Distribution Report

Click the CPE distribution report option to enable searching for connection reports for device by the following parameters:

- Manufacturer

The following controls are available:

- Show All
- Show by specific date. The table that is generated only shows those CPEs that were registered on the selected date.

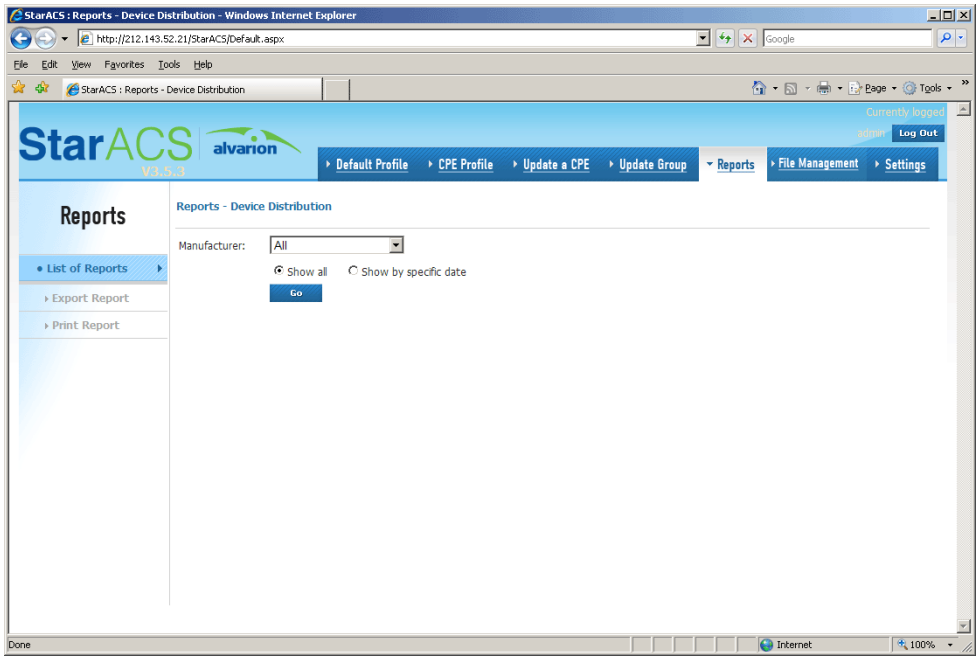


Figure 80: CPE Distribution Report Window

To display a distribution report:

1. Select the CPE device manufacturer and model from the lists, or specify All.
2. Click Go. The distribution report table for the selected devices is displayed and the Export Report and Print Report options are enabled.

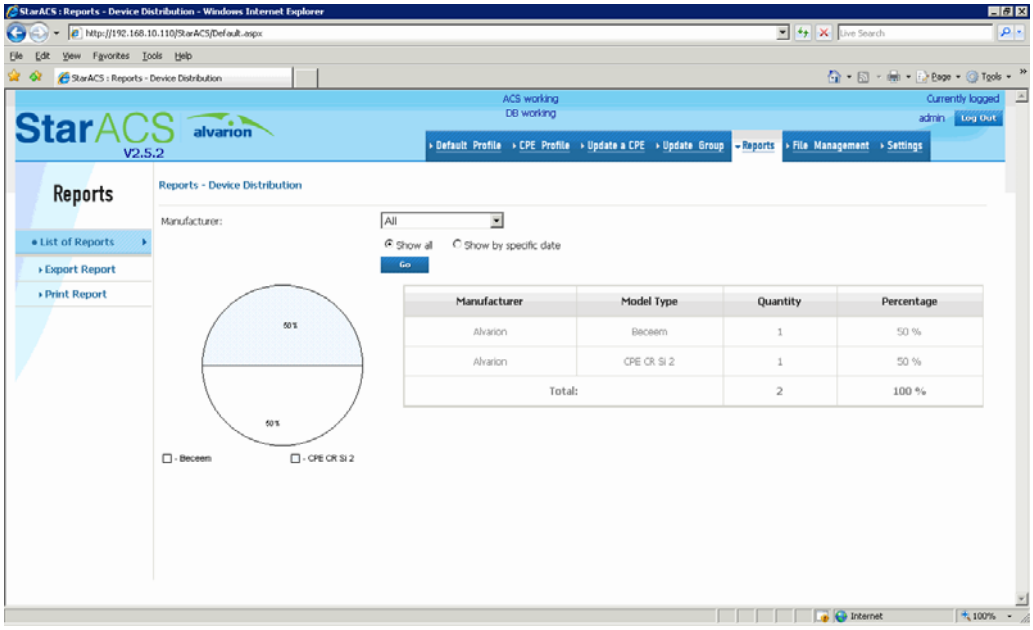


Figure 81: CPE Distribution Report

10.2 CPE Registration Report

The Registration report is an inventory report of the CPE, that lists the times when the last contact with the CPE was created. A CPE cannot be connected but not registered. However, a CPE can be register but not connected, which is the usual state.

Click the CPE registration report option to enable searching for registration reports for devices by the following parameters:

- Manufacturer
- Model
- From Date
- To Date

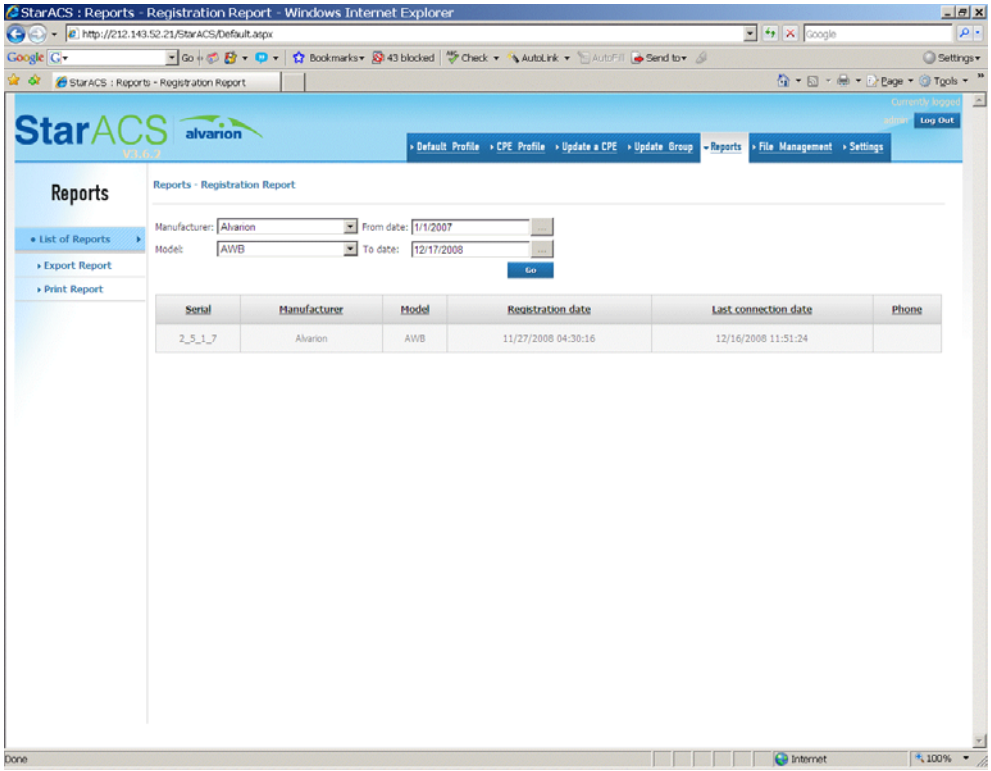


Figure 82: CPE Registration Report

10.3 Pending Tasks Report

Click the Pending Tasks option to display reports of pending tasks by the following parameters:

- Manufacturer
- Model
- From date

A task may be pending for the following reasons:

- The task was configured to be executed at next time reconnection
- The CPE device is not online (The connection between the ACS and the CPE device is broken).

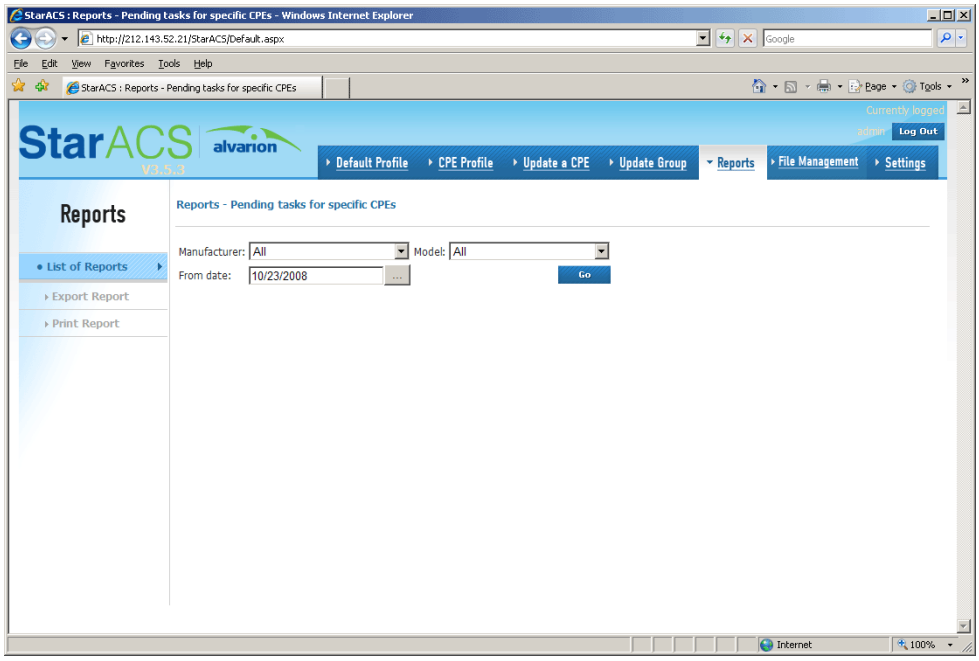


Figure 83: Pending Tasks Window

Select the Manufacturer, Model, and From date and click Go. The Pending Tasks table is displayed.

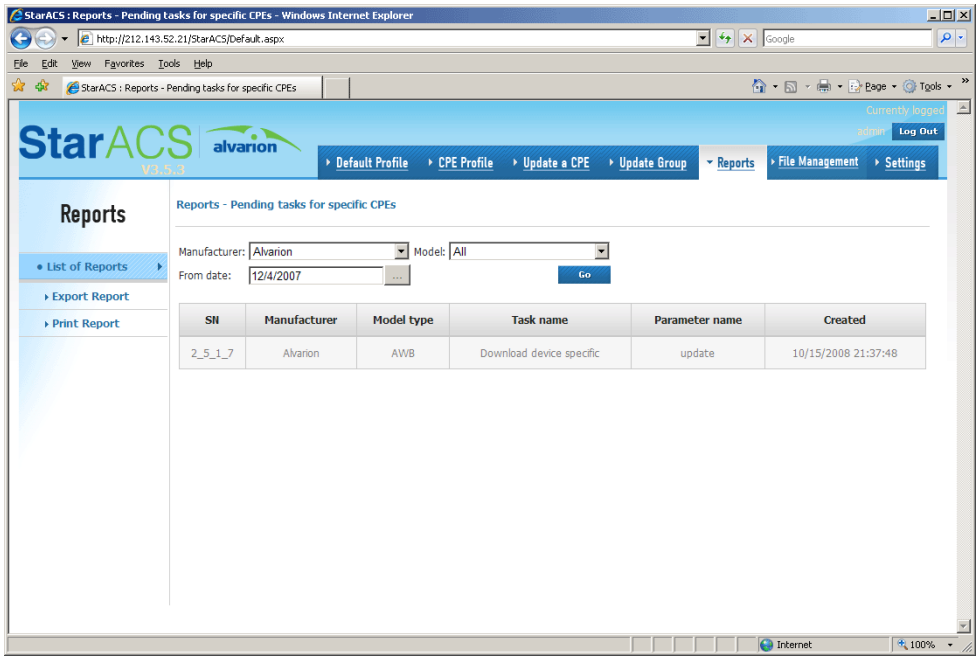


Figure 84: Pending Tasks Table

10.4 Rejected Tasks Report

Rejected task is no response from the CPE on a task, whereas in failed task – the CPE response about this task is “failed”.

Click the Rejected Tasks option to display reports of rejected tasks by the following parameters:

- Manufacturer
- Model Type
- From date

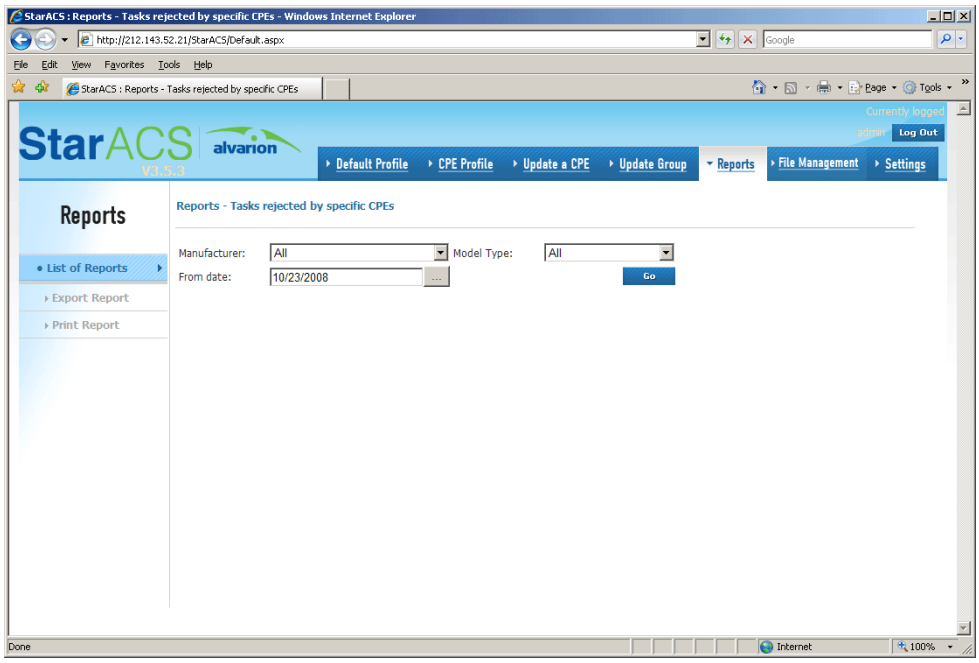


Figure 85: Rejected Tasks Window

Select the Manufacturer, Model, and From date and click Go. The Rejected Tasks table is displayed.

10.5 Activity

Click the Activity option to display activity log reports. The following page is displayed:

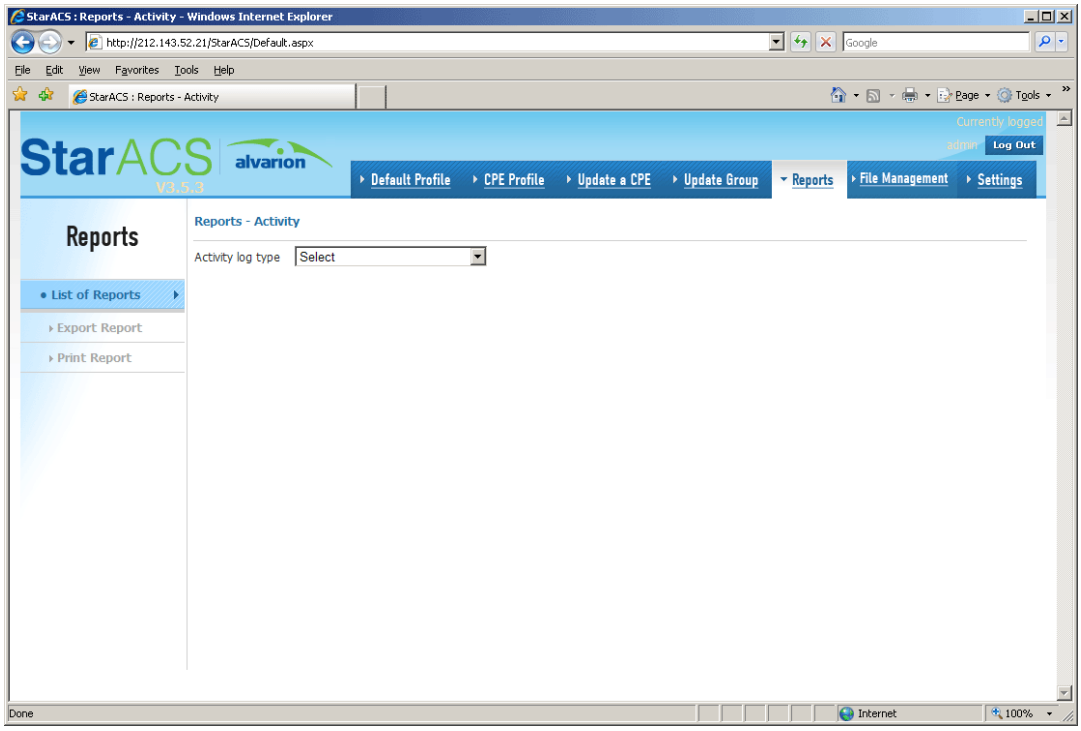


Figure 86: Activity Report Window

Activity reports are displayed by the following activity types:

- Profiles
- Update a CPE
- Update Group
- System

10.5.1 Profiles Activity Report

The activity report lists all the activities that were performed on profiles, such as: create, activate, delete, edit a CPE profile or the default profile.

To display profile activity:

1 Select Profiles from the Activity log type list. The following page is displayed.

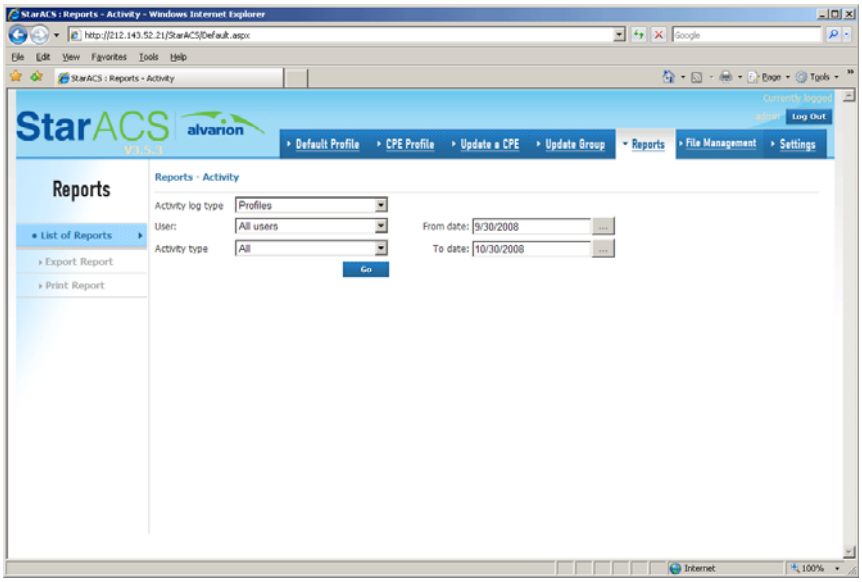


Figure 87: Profiles Window

2 Select the specific user or All users.

3 Select the Activity type. The possible values are All, Create profile, Delete profile, Edit profile, Import profile, Activate profile, Add firmware, and Delete firmware.

4 Select the report date range in From date and To date.

5 Click Go. The Profiles activity report is displayed.

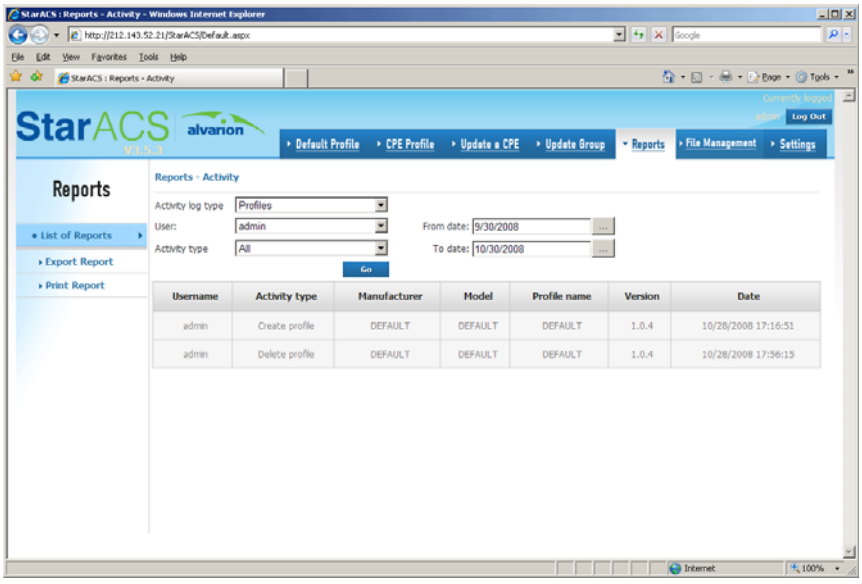


Figure 88: Profiles Activity Report

10.5.2 Update a CPE Activity Report

To display CPE update activity:

1 Select Update a CPE from the Activity log type list. The following page is displayed

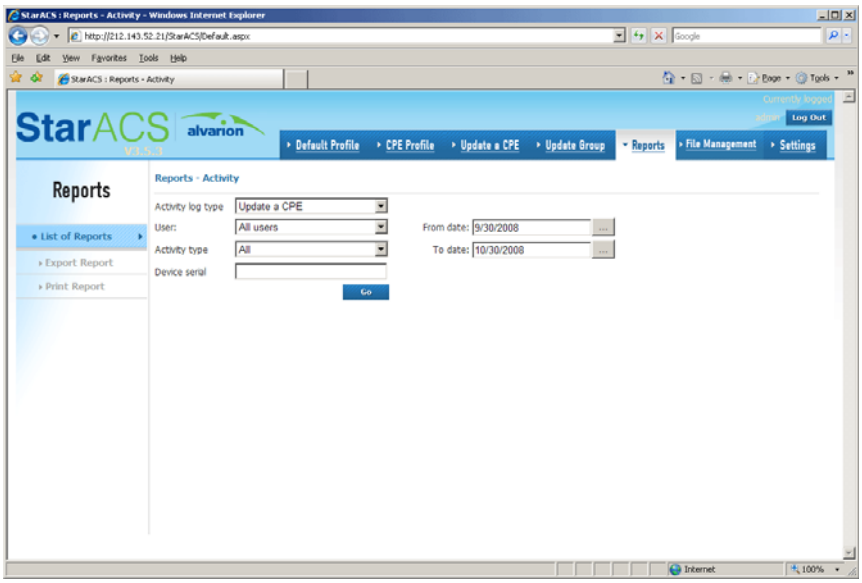


Figure 89: CPE Update Activity Log

2 Select the specific user or All users.

3 Select the Activity type. The possible values are All, Reset to factory default, Reboot device, Delete device, Change parameters, Polling add, Polling remove, Add firmware, Delete firmware, Add object, Delete object, Add file upload, Delete file upload, Add diagnostic, and Delete diagnostic.

4 Select the report date range in From date and To date.

5 To list results for a specific device, enter the device serial number. Otherwise, leave blank.

6 Click Go. The CPE Update activity report is displayed.

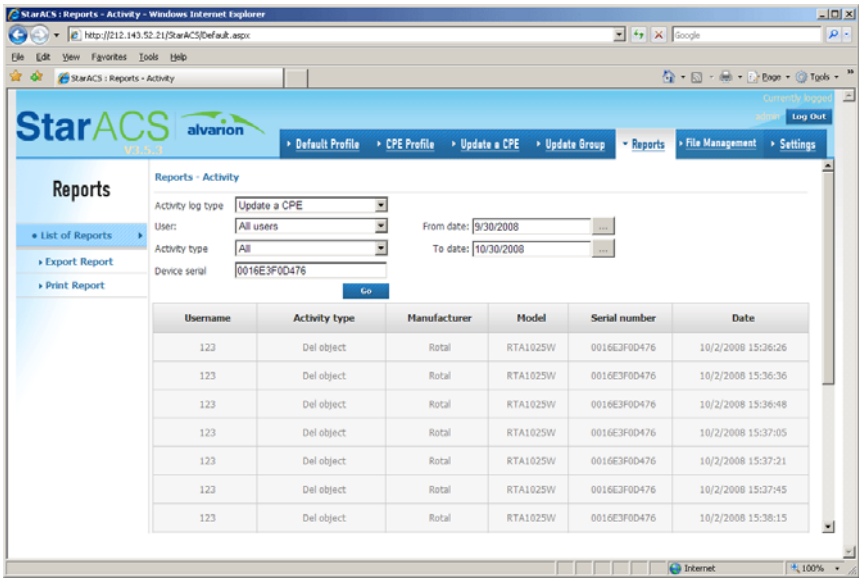


Figure 90: CPE Update Activity Report

10.5.3 Update Group Activity Report

To display CPE Group update activity:

1 Select Update Group from the Activity log type list. The following page is displayed

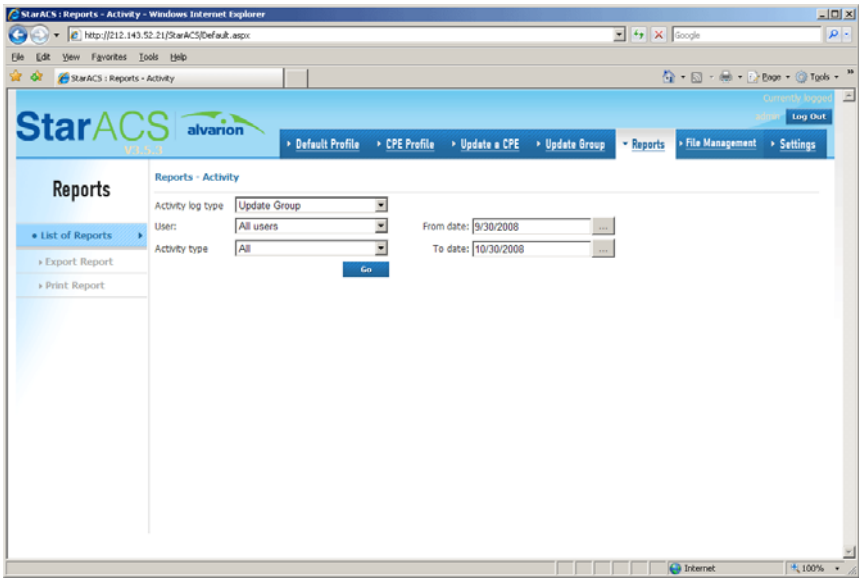


Figure 91: CPE Group Update Activity Log

2 Select the specific user or All users.

3 Select the Activity type. The possible values are All, Create update, Delete update, Edit update, Import update, Activate update, Scheduled activate, Add firmware, EditFirmware, and Delete firmware.

4 Select the report date range in From date and To date.

5 To list results for a specific device, enter the device serial number. Otherwise, leave blank.

6 Click Go. The CPE Group Update activity report is displayed.

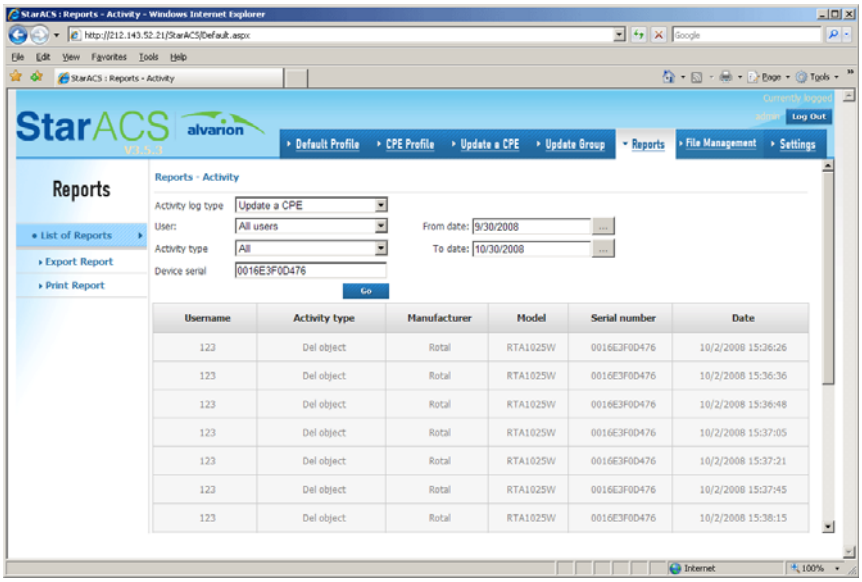


Figure 92: CPE Group Update Activity Report

10.5.4 System Activity Report

To display System activity:

1 Select System from the Activity log type list. The following page is displayed.

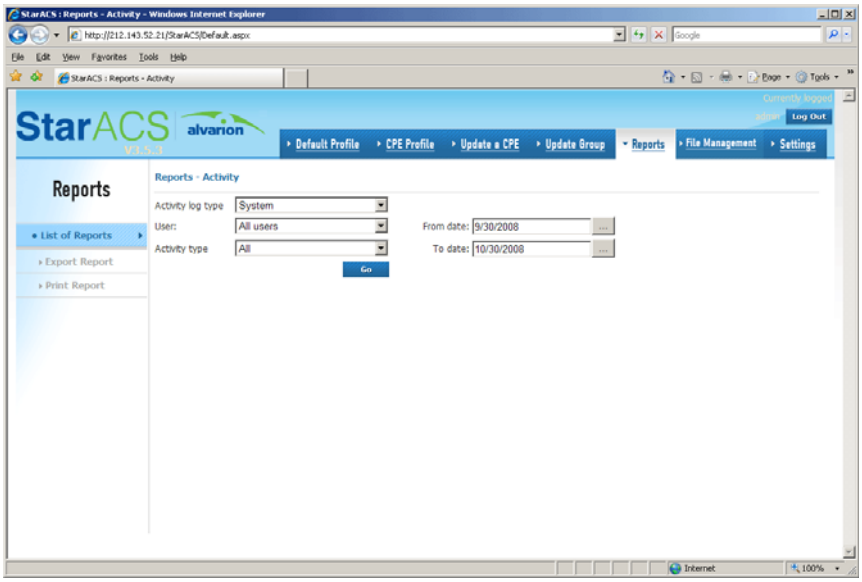


Figure 93: System Activity Log

2 Select the specific user or All users.

3 Select the Activity type. The possible values are All, User login, User logout, Configuring email, Configuring DB, Configuring alert, Create user, Delete user, and Edit user.

4 Select the report date range in From date and To date.

5 Click Go. The System activity report is displayed.

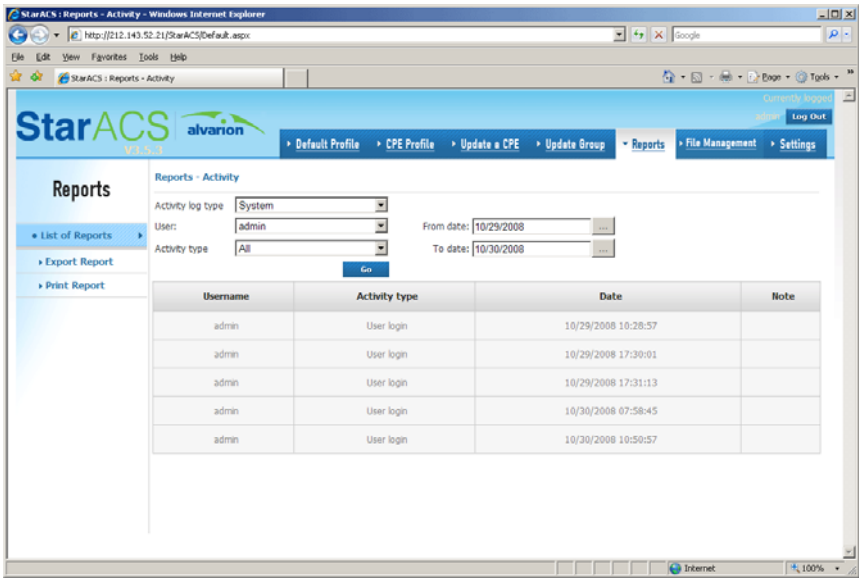


Figure 94: System Activity Report

10.6 Updates Report

Click the Updates Report option to display reports of updating tasks by the following parameters:

- Manufacturer
- Model
- All dates
- Specific Date

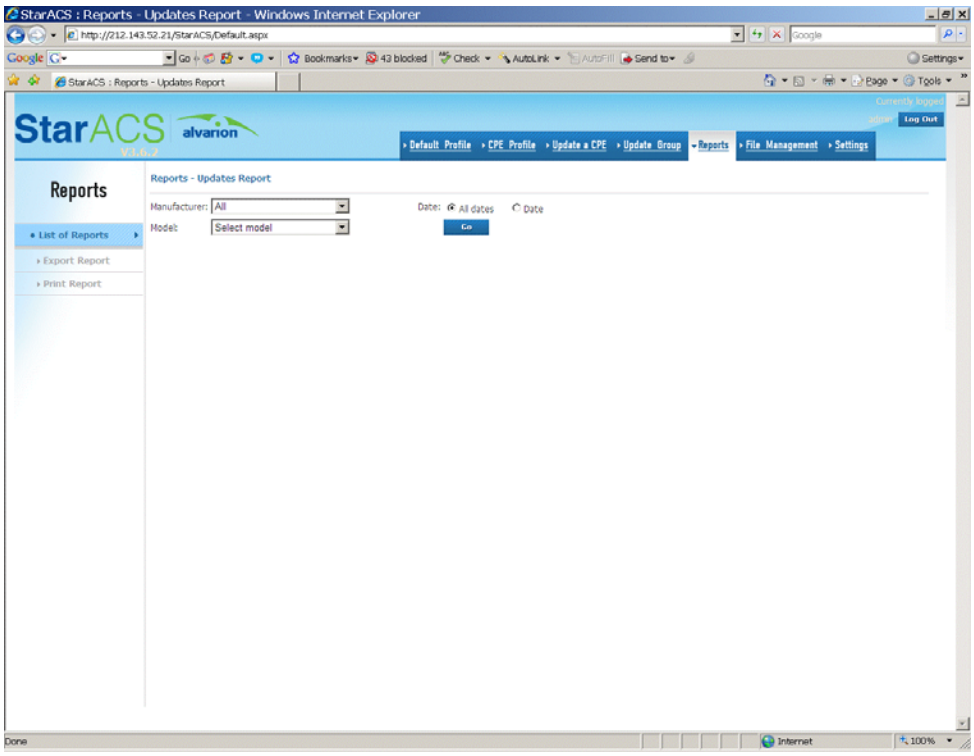


Figure 95: Updates Window

Select the Manufacturer, Model, All Dates or a specific date and click Go. The Updates table is displayed.

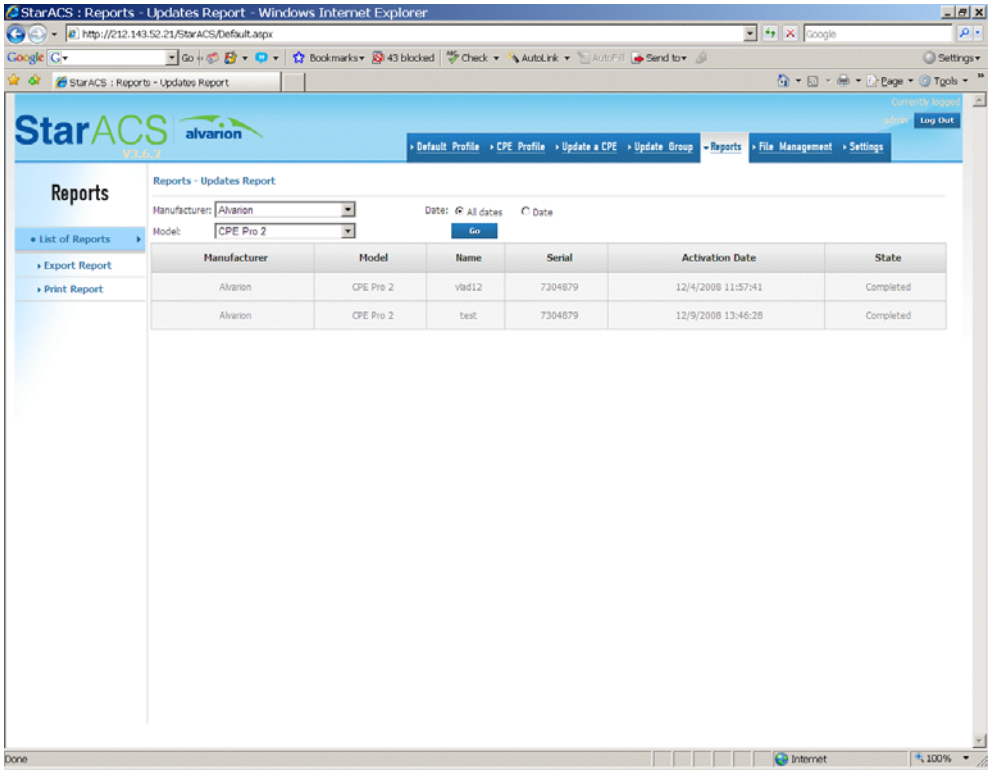


Figure 96: Updates Report

11. File Management

In the File Management window you can view managed files or add files. The settings of the file FTP server are set in the Settings window (see "File Server Settings" on page 27). If the ACS can not connect to the FTP server configured in *Settings -> File Server*, an error message is displayed.

Click the File Management tab to display the following menu options:

- File Management
- Add

11.1 File Management

Click the File Management menu option to display a table of managed files:

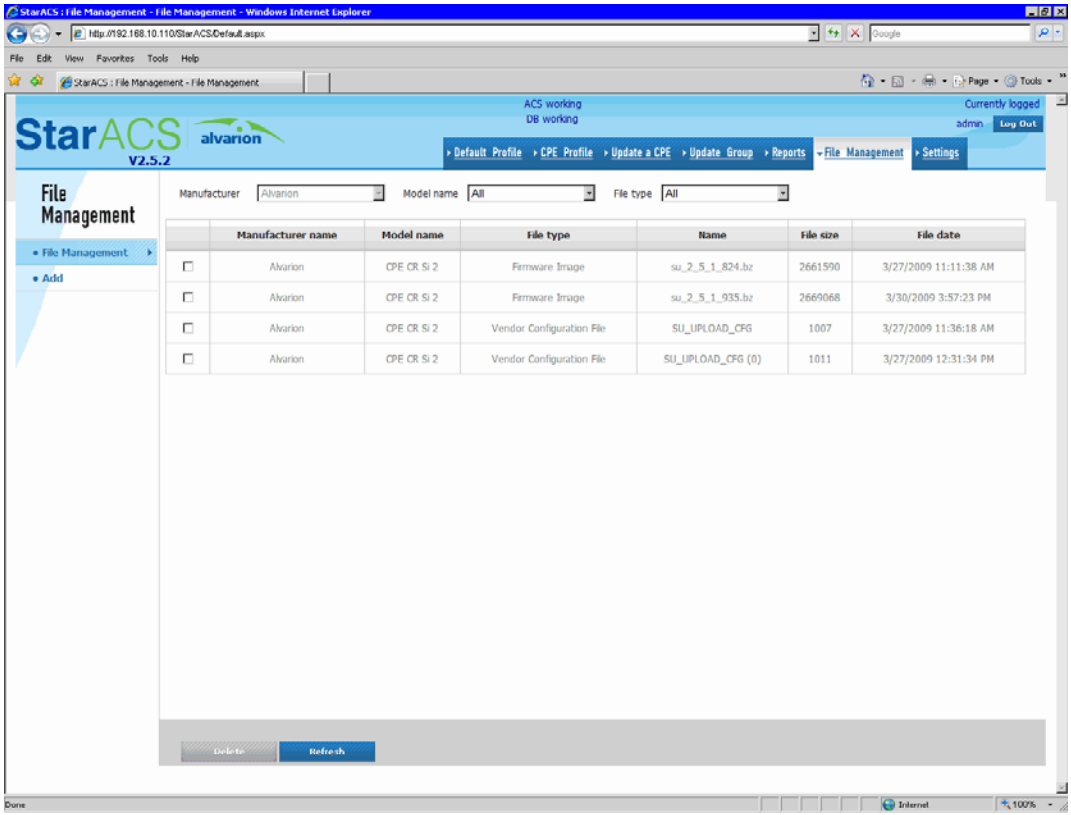


Figure 97: File Management Window

The following fields are available for management:

- Manufacturer

- Model name
- File type - the possible values are All, Firmware Image, and Vendor Configuration File

The table displays the following fields:

- Manufacturer name
- Model name
- File type
- Name
- File size
- File date

The following controls are available:

- Delete - deletes the selected file
- Refresh - refreshes the display

11.2 Adding a File to the File Server

Click the Add menu option to add a file to the managed files:

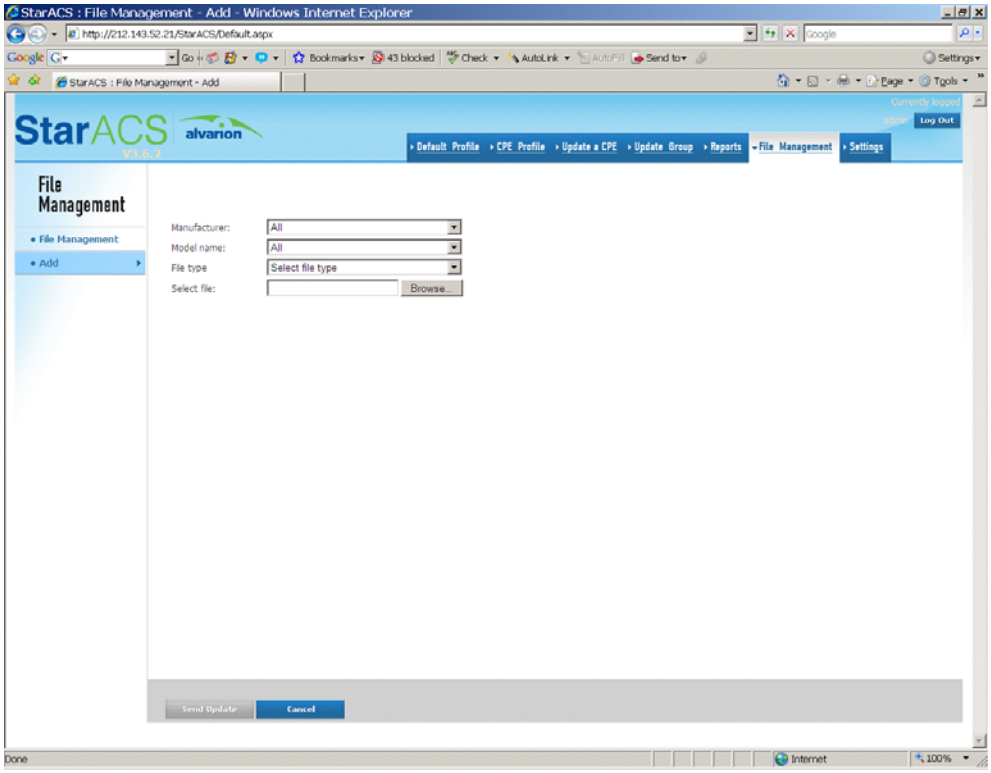


Figure 98: Add File

The following fields are available:

- Manufacturer
- Model name
- File type - the possible values are Firmware Image, Web content, and Vendor Configuration File
- Select file - the file name to add

The following controls are available:

- Send Update - updates the managed files with the selected file
- Cancel - cancels the selected file from the managed files

To add a file to the managed files:

1. Select the file type.
2. Enter the name of the file or click Browse and select it.
3. Click Send Update. The file is added to the managed files.

12. CSR

CSR is a StarACS dependent application, operating with the StarACS database and resources but with a separate security system. This application enables the customer service representative (CSR) to manage, monitor, and diagnose customer premises equipment (CPE) complying with the TR-069 protocol.

Depending on security level, the customer service representative can perform the following tasks:

- Diagnose and configure CPEs
- Update the firmware version
- Upload files from the CPE
- Verify the CPE's connectivity status
- Reset/Reboot the CPE
- Display the CPE's activity log
- Perform CPE specific RPC Methods
- Manage CSR users
- Operate with Reports
- Configure the database, upload/download file servers, alerts, email

12.1 Configuration

To configure CSR:

1. Verify that Windows IIS is installed on the computer from which CRS will run.
2. Copy the CSR folder to the IIS root location (by default C:\Inetpub\wwwroot).
3. Assign full permission for the user Everyone to the CSR folder (see Figure 99) if required by the security settings of the operating system.

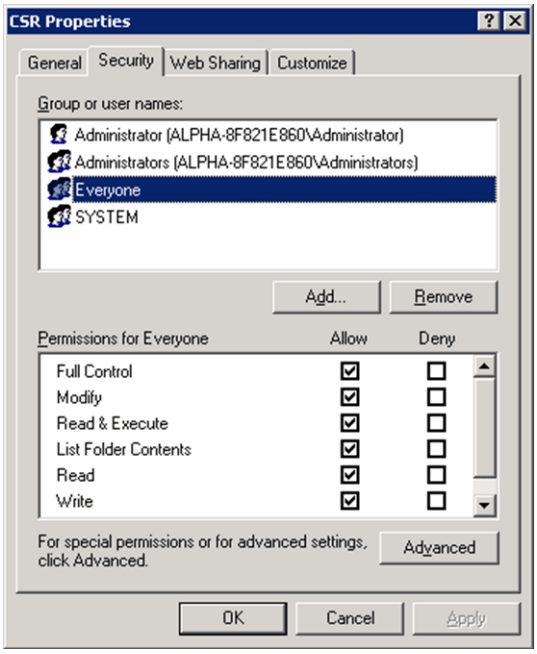


Figure 99: Folder Permissions

4 Open the ConnectionStrings.xml file (located in C:\Inetpub\wwwroot\CSR\XML) and edit it according to the DB configuration of the ACS server. Select MySQL or Oracle and fill in the proper DB connection data. Save the file and restart the IIS.

5 Open a web browser, enter the link to the CSR application (http://ip_address/CSR/Default.aspx) and press Enter. The login window is displayed.

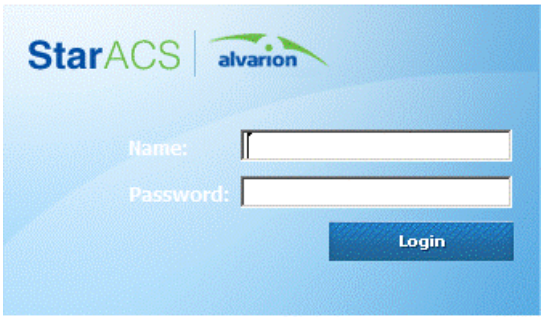


Figure 100: Login WIndow

6 Enter the user name and password (default name and password:admin/admin) and press Enter or click Login. The Update CPE window is displayed.

7 From the Settings tab, select the ACS and DB menu option to configure the connection to the StarACS application (Figure 101). Once the database connection has been correctly configured, the devices from StarACS can be reached from Update a CPE menu. The devices can be managed, depending on the permission assigned to the user.

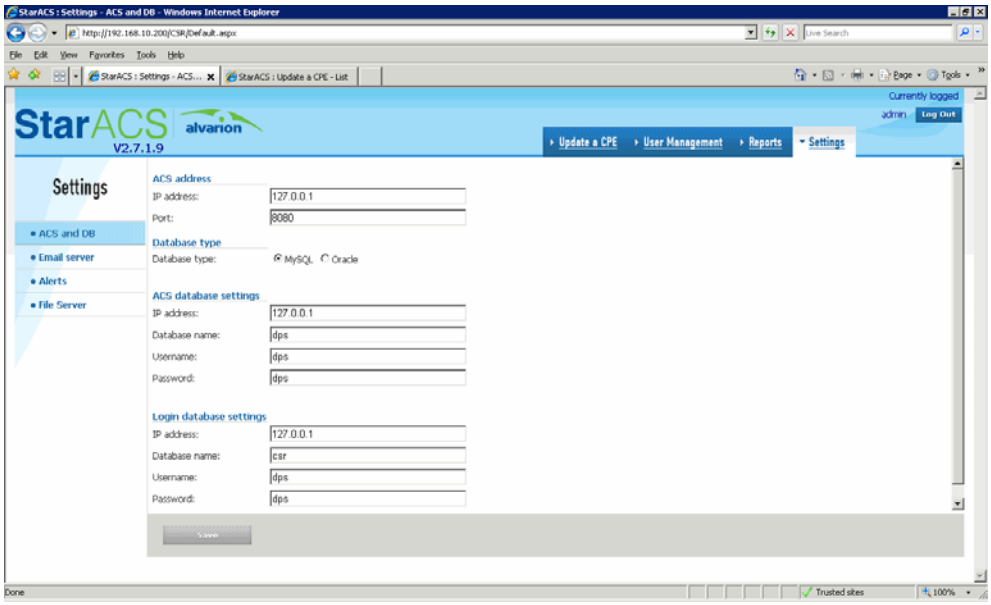


Figure 101: Settings Window

12.2 User Management

CSR defines three levels of user access to the StarACS resources; admin, csr and user. Users can be added and/or configured from the User Management menu by a user with admin permission only.

To add a new user:

- From the User Management tab, click Add and enter the parameters for the user (Figure 102).

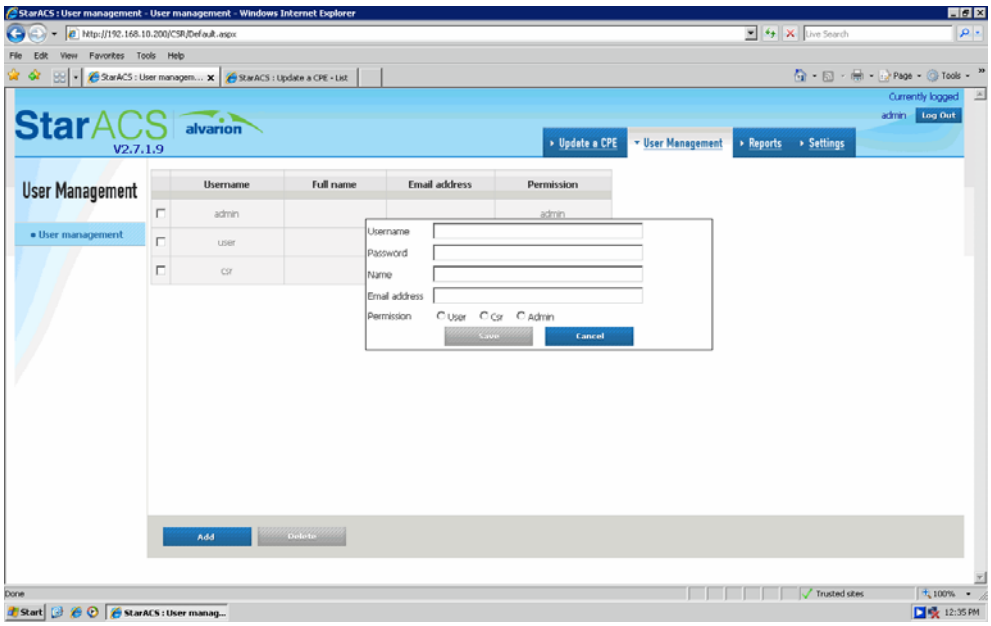


Figure 102: User Management Window

To modify user settings:

- Select the user from the list in the User Management window and modify the parameters as required.

12.2.1 Admin Access Level

Users with admin permission for the CSR application are different from StarACS admin users. This section refers to CSR users only.

Users with admin privileges have the rights to access the following main menus:

- **Update a CPE** - the same full access as StarACS (see "Updating a CPE" on page 44)
- **User Management** - this applies to the CSR only
- **Reports** - See "Monitoring" on page 87. The CSR application only has access to a limited number of reports.

- **Settings** - See “Defining StarACS Settings” on page 15. or operating with Settings menu please check the section of this manual that explains it. The CSR application only has access to a limited number of settings.

12.2.2 Csr Access Level

Users with Csr permission have the rights to access the following main menus:

- **Update a CPE** - the same full access as StarACS (see “Updating a CPE” on page 44)

12.2.3 User Access Level

Users with User permission have the rights to access the following main menus:

- **Update a CPE** - limited access. Access is Read Only and View Filters are not available.

13. Default Profile Parameters

Table 7: Default Profile Parameters

Parameter Name	Description	Range	Default
NMS User Name	User name used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol. This user name is used only for HTTP-based authentication of the CPE.	N/A The user name and password should be registered as ACS users	tr069
NMS Password	Password used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol. This password is used only for HTTP-based authentication of the CPE. When read, this parameter returns an empty string, regardless of the actual value.	N/A	tr069
Keep Alive Enable	Whether or not the CPE maintains a keep alive mechanism.	Yes/No	1=Yes (checkbox selected)
Keep Alive Interval	The duration in seconds of the interval to wait before reaching a decision that the server is no longer available.	N/A	
Connection Request User Name	User name used to authenticate an ACS making a connection request to the CPE	N/A	dps

Table 7: Default Profile Parameters

Parameter Name	Description	Range	Default
Connection Request Password	Password used to authenticate an ACS making a Connection Request to the CPE. When read, this parameter returns an empty string, regardless of the actual value.	N/A	dps

14. Device Dependent Configuration

This section includes configuration information for the following devices:

- "BreezeMAX 1000 CPEs" on page 134
- "BreezeMAX 2000 CPEs" on page 160
- "BreezeMAX 3000 CPEs" on page 177
- "BreezeMAX Si 4000 CPEs" on page 196
- "BreezeMAX 5000 CPE" on page 253
- "NG_VG" on page 277

14.1 BreezeMAX 1000 CPEs

The following are the parameters and file transfer configurations for Alvarion's WiMAX 802.16e 1000 PRO and Si CPEs based on the Rosedale 2 chip.

14.1.1 File Transfer Configurations

- Firmware Download:
  The required parameter for firmware download is:
  URL in the format tftp://ip_addr/version.bz, for example:
  tftp://192.168.10.200/su_2_5_1_1015.bz

- Configuration File Download:
  The required parameter for firmware download is:
  URL in the format tftp://ip_addr/config_file, for example:
  tftp://192.168.10.200/ SU_PARAMS_2_5_1_1015.xml

- Configuration File Upload:
  The required parameter for firmware download is:
  URL in the format tftp://ip_addr/config_file, for example:
  tftp://192.168.10.200/ SU_PARAMS_2_5_1_1015.xml

When operating with File Management, the File Servers: Download server details and CPE upload server details must be configured with tftp://ip_addr, for example: tftp://192.168.10.200.

14.1.2 List of Parameters

Table 8: Device Info

Parameter Name	Description	Type	Range	Default
Manufacturer	The manufacturer of the CPE	String of up to 64 characters		Alvarion
Info Model Name	A string identifying the particular CPE model and version	String of up to 64 characters	CPE Pro 2, CPE Pro 2L, CPE Si 2	
Product Variant	Radio Type. A string identifying the particular CPE model and version	String of up to 64 characters	[2X|3X|5X]	
Description	A full description of the CPE device	String of up to 256 characters	Alvarion WiMax <ProductClass> <ModelName> <ProductVariant>	
Product Class	Product Class of the CPE	String of up to 64 characters	BMAX	Not Set Yet
Serial Number	Serial number of the CPE	String of up to 64 characters		12345678
Hardware Version	Hardware version number	String of up to 64 characters		
Software Version	The software version currently running	String of up to 32 characters	x.x.x.x	
Up Time	Time in seconds since the CPE was last restarted	unsignedInt	0 - 4294967295 Sec	
Name	A full description of the CPE device	String of up to 256 characters.		Not Set Yet
Organization	The name of the organization to which the CPE belongs	String of up to 32 characters.		Not Set Yet
Address	The organization's address	String of up to 32 characters.		Not Set Yet
Country	The country where the organization is located	String of up to 32 characters.		

Table 8: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Manufacturer OUI	Organizationally unique identifier of the device manufacturer. Represented as a six hexadecimal-digit value using all upper-case letters and including any leading zeros. The value MUST be a valid OUI	String of up to 64 characters		0020D6
Spec Version	Represents the version of the specification implemented by the device	String of up to 16 characters	1.0	
Shadow Indication			0 - The CPE runs Main version 1- The CPE runs Shadow version	
Configuration was Changed	Informs whether the CPE TR-069 parameters have been altered internally and not by ACS		0 - False 1 - True	
SmartCard Status	SIM card status	unsignedInt	0 - Installed 1 - Not Installed 2 - Failed	

Table 8: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Vendor Config File.i				
Configuration File Name	Name of the vendor configuration file according to the name of the downloaded file	String of up to 64 characters.	e.g. SU16e_2_0_6_76.xml	
Configuration File Version	A string identifying the configuration file version currently used in the CPE Version - Major.Minor.	String of up to 16 characters.	x.x.x.x	
Configuration File Date	Date and time when the content of the current version of this vendor configuration file was first applied by the CPE	DateTime	YYYY-MM-DDTHH:MM:SS	
Configuration File Description	A description of the vendor configuration file from XML file	String of up to 256 characters.		
Main SW File				
Main SW File Name	Name of the main software file	String of up to 64 characters.	e.g. SU16e_2_0_6_76.bz	
Version of Main SW	A string identifying the main software file version currently used in the CPE	String of up to 16 characters.	x.x.x.x	
Main SW File Date	Date and time when the content of the current version of this main software file file was first applied by the CPE	String of up to 40 characters	e.g. Mon Feb 11 10:04:38 2008	
Shadow SW File				
Shadow SW File Name	Name of the shadow software file.	String of up to 64 characters.	e.g. SU16e_2_0_6_76.bz	

Table 8: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Version of Shadow SW	A string identifying the shadow software file version currently used in the CPE	String of up to 16 characters.	x.x.x.x	
Shadow SW File Date	Date and time when the content of the current version of this shadow software file was first applied by the CPE	String of up to 40 characters.	e.g. Mon Feb 11 10:04:38 2008	

Table 9: Management Server

Parameter Name	Description	Type	Range	Default
NMS User Name	The Username used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol (used only for HTTP-based authentication).	String of up to 256 characters.		tr069
NMS User Password	The Password used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol (used only for HTTP-based authentication).	String of up to 256 characters.		tr069
Periodic Inform Enable	Enables to set whether or not the CPE must periodically send CPE information to the Server using the Inform method call.	Boolean	0 - Disable 1 - Enabled	1

Table 9: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Periodic Inform Interval	The duration in seconds of the interval for which the CPE must attempt to connect with the ACS and call the Inform method. Functional only if the Periodic Inform Enable parameter is enabled (checked).	unsignedInt		86400
Periodic Inform Time	An absolute time reference in UTC to determine when the CPE should initiate the Inform method calls. Each Inform call must occur at this reference time plus or minus an integer multiple of the Periodic Inform Interval. This parameter will be read only and set to zero dateTime value (0000-00-00T00:00:00) indicates that no particular time reference is specified. That is, the CPE may locally choose the time reference, required only to adhere to the specified PeriodicInformInterval.	DateTime	YYYY-MM-DDTHH:MM:SS	0000-00-00T00:00:0

Table 9: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Parameter Key	The value of the ParameterKey argument from the most recent Set Parameter Values, Add Object, or Delete Object method call from the Server. If there have been no such calls, this value is empty	String of up to 32 characters.		
Connection request URL	HTTP URL for an ACS to make a Connection Request notification to the CPE,in the form: http://host:port/path The “host” portion of the URL MAY be the IP address for the management interface of the CPE in lieu of a host name.	String of up to 256 characters.		http://Management_IP_addr_of_CPE:8082/MAC_address_of_cpe
Connection Request Username	Username used to authenticate an ACS making a Connection Request to the CPE.	String of up to 256 characters.		dps
Connection Request Password	The password used to authenticate an ACS making a Connection Request to the CPE.	String of up to 256 characters.		dps

Table 9: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Upgrades Managed	Indicates whether or not the ACS will manage upgrades for the CPE. If true (1), the CPE SHOULD not use other means other than the ACS to seek out available upgrades. If false (0), the CPE MAY use other means for this purpose.	Boolean	1 - True 0 - False	0
Network Time	Specifies whether the CPE succeeded or failed to synchronize to the local clock used for loging events with the network	Boolean	0 - Not available 1 - Available	
URL	URL for the CPE to connect to the ACS using the CPE WAN Management Protocol. This parameter MUST be in the form of a valid HTTP. The “host” portion of this URL is used by the CPE for validating the certificate from the ACS when using certificate-based authentication.	String of up to 256 characters.	ASCII representation of the following text: http://aaa.bbb.ccc.ddd/nnn	

Table 10: Services

Parameter Name	Description	Range	Default
Services			
Actual Service Mode	Determines whether the CPE will act in IP CS or L2 CS	0 - IP 1 - L2 CS	
Configured Service Mode	Determines whether the CPE will act in IP CS or L2 CS. The change in settings of this parameter takes effect only after reset.	0 - IP CS 1 - L2 CS	0 - IP CS
IP CS			
VLAN to DSCP Number of Entries	Number of instances of VLAN to IPCS rules (active and inactive rules) To add an instance: 1 Click "Add object" control button to add a new instance of VLAN to DSCP. The "Active" field should be set to 0 (not active). 2 Send a message with the values for the fields in the newly created object. 3 Set the "Active" field to 1 (active). This will cause the all the fields of the object to become 'Read-Only'. To inactivate or remove an instance click the "Delete object" control button. To update an object, delete the existing object and add a new object.	0 - 7	

Table 10: Services (Continued)

Parameter Name	Description	Range	Default
VLAN to DSCP.i			
Active	This is a read only field and is managed by "Add Object" and "Delete Object"	0 - Not active 1 - Active	1
In VLAN ID	This is a read only field and is managed by "Add Object" and "Delete Object"	0 - 4095	3
In VLAN Priority	This is a read only field and the number is managed by "Add Object" and "Delete Object"	0 - 7	0
Out DSCP Start	On UL, in case start=stop and marking is enabled, all packets that match the vlan defined for the rule will have their DSCP replaced with outDSCPstart/stop. On DL, In case start=stop and marking is enabled and learnedDSCP is initialized, the matched packet will have its DSCP restored. In case start != stop or marking is disabled or learnedDSCP is not initialized, the matched packet will not have its DSCP restored. In both cases, the matched packets will have Vlan added. This is a read only field is managed by "Add Object" and "Delete Object"	0 - 63	21

Table 10: Services (Continued)

Parameter Name	Description	Range	Default
Out DSCP End	On UL, in case start=end and marking is enabled, all packets that match the vlan defined for the rule will have their DSCP replaced with outDSCPstart/stop. On DL, In case start=end and marking is enabled and InDSCP is initialized, the matched packet will have its DSCP restored. In case start != stop or marking is disabled or learnedDSCP is not initialized, the matched packet will not have its DSCP restored. In both cases, the matched packets will have Vlan added. This is a read only field and is managed by "Add Object" and "Delete Object"	outDSCPstart - 63	21
DSCP ReMarking Enabled	This is a read only field and is managed by "Add Object" and "Delete Object".	0 - False 1 - True	1

Table 10: Services (Continued)

Parameter Name	Description	Range	Default
L2 CS			
DSCP to VLAN Number of Entries	Number of instances of VLAN to L2 CS rules (active and inactive rules) To add an instance: 1 Click "Add object" control button to add a new instance of DSCP to VLAN. The "Active" field should be set to 0 (not active). 2 Send a message with the values for the fields in the newly created object. 3 Set the "Active" field to 1 (active). This will cause the all the fields of the object to become 'Read-Only'. To inactivate or remove an instance click the "Delete object" control button. To update an object, delete the existing object and add a new object.		
DSCP to VLAN			
Active	This is a read only field and is managed by “Add Object” and “Delete Object”	0 - Not Active 1 - Active	1

Table 10: Services (Continued)

Parameter Name	Description	Range	Default
DSCP Start	On UL, in case start=stop and marking is enabled, all packets that match the vlan defined for the rule will have their DSCP replaced with outDSCPstart/stop. On DL, In case start=stop and marking is enabled and learnedDSCP is initialized, the matched packet will have its DSCPrestored. In case start != stop ormarking is disabled or learnedDSCP is not initialized, the matched packet will not have its DSCP restored. In both cases, the matched packets will have Vlan added. This is a read only field is managed by “Add Object” and “Delete Object”	0 - 63	

Table 10: Services (Continued)

Parameter Name	Description	Range	Default
DCSCP Stop	On UL, in case start=end and marking is enabled, all packets that match the vlan defined for the rule will have their DSCP replaced with outDSCPstart/stop. On DL, In case start=end and marking is enabled and InDSCP is initialized, the matched packet will have its DSCP restored. In case start != stop or marking is disabled or learnedDSCP is not initialized, the matched packet will not have its DSCP restored. In both cases, the matched packets will have Vlan added. This is a read only field and is managed by “Add Object” and “Delete Object”	0 - 64	
Out VLAN ID	This is a read only field and is managed by “Add Object” and “Delete Object”	0 - 4095	NA
Out VLAN Priority	This is a read only field and the number is managed by “Add Object” and “Delete Object”	0 - 8	0
Management			
Actual DSCP Marking	DSCP value used in Uplink direction for all management traffic (including DHCP sessions)	0 - 63	

Table 10: Services (Continued)

Parameter Name	Description	Range	Default
Configured DSCP Marking	The configured DSCP value used in Uplink for all management traffic (including DHCP sessions). The entered value will become the actual value after reset.	0 - 63	6

Table 11: WAN Device

Parameter Name	Description	Range	Default
NDS			
Antenna Selection Control	Enables to select the antenna to be used.	0- External 1-6 Internal (front & rear) 7- Auto	7- Auto
Mobility Mode	Enables/disables fast mobility.	0 - Fixed / Nomadic 1 - Mobile	0 - Fixed / Nomadic
NDS Parameters			
BaseStationSelection			
Allowed BS ID	The currently configured BS ID that is allowed to communicate with the SU		186.190.0.0.250.206
Allowed BS ID Mask	The currently configured BS ID mask that is allowed to communicate with the SU		00:00:00:00:00:00
Preffered BS ID	The currently configured BS ID that together with the Preferred BS ID Mask define the initial search range for the best BS.		186.190.0.0.250.206
Preffered BS ID Mask	The currently configured BS ID Mask that together with the Preferred BS ID define the initial search range for the best BS.		00:00:00:00:00:00

Table 11: WAN Device (Continued)

Parameter Name	Description	Range	Default
Configured Allowed BS ID	Defines the BS ID used together with the BS ID Mask to define the range of BSs that can communicate with the SU.	6 groups of up to 3 digits each. Each group range is 0-255.	186.190.0.0.250.206
Configured Allowed BS ID Mask	Defines the BS ID Mask used together with the BS ID to define the range of BSs that can communicate with the SU.	6 groups of up to 3 digits each. Each group range is 0-255.	0.0.0.0.0.0
Configured Preffered BS ID	The BS ID that together with the Preferred BS ID Mask define the initial search range for the best BS. The SU will select the best BS within this range. If no BS is found within this range, the SU will continue searching in the entire range defined by the BS ID and BS ID Mask parameters.	6 groups of up to 3 digits each. Each group range is 0-255.	186.190.0.0.250.206
Configured Preffered BS ID Mask	The BS ID Mask that together with the Preferred BS ID define the initial search range for the best BS.	6 groups of up to 3 digits each. Each group range is 0-255.	0.0.0.0.0.0
Scanning.1			
Scan Bandwidth	The scanning frequency currently configured	2 - 5 Mhz 3 - 7 Mhz 5 - 10 Mhz 6 - Auto	6 - Auto
Start Frequency	The lowest frequency currently configured	See Table 12	Default values according to the 2.x or 3.x
Stop Frequency	The highest frequency currently configured	See Table 12	Default values according to the 2.x or 3.x
Main Frequency Step	The main frequency step currently configured		

Table 11: WAN Device (Continued)

Parameter Name	Description	Range	Default
Intermediate Frequency Step	The intermediate frequency steps currently configured		
Configured Scan Bandwidth	Specifies the scanning frequency that shall become the actual value after reset.	2 - 5 MHz; 3 - 7 MHz; 5 - 10 MHz; 6 - Auto	6 - Auto
Configured Start Frequency	The lowest frequency in the range of frequencies to be scanned (in MHz)	Depends on the radio band of the unit. See Table 12	Default values according to the 2.x or 3.x
Configured Stop Frequency	The highest frequency in the range of frequencies to be scanned (in MHz).	Depends on the radio band of the unit. See Table 12	Default values according to the 2.x or 3.x
Configured Main Frequency Step	The Main Scanning Step that together with the Intermediate Scanning Steps define the frequencies to be scanned between the Start and End Rx Frequencies.	5 MHz and 10 MHz: 125 KHz - 5000 KHz 7 MHz: 125 KHz - 1750 KHz	5 MHz and 10 MHz: 2500 KHz 7 MHz: 875 KHz
Configured Intermediate Frequency Step	8 steps that define the frequencies to be scanned between the Start and End Rx Frequencies	Depends on CPE frequency, see Table 12	Default values according to the 2.x or 3.x
Discrete List Number of Entries	Specifies the current number of discrete frequencies. This is a read only field and the number is managed by "Add Object" and "Delete Object"	0 - 10	
Discrete List.i			
Frequency	A discrete frequency (in kHz)	A valid frequency.	
Status			
Serving Base Station ID	The BS ID of the base station currently serving the CPE		

Table 11: WAN Device (Continued)

Parameter Name	Description	Range	Default
Authentication Method	The authentication method in use	0 - Not authenticated 1 - EAP TLS (future use) 2 - EAP TTLS 3 - EAP AKA (future use)	
Configured Authentication Method	Select the authentication method to be used	0 - Not authenticated 1 - EAP TLS (future use) 2 - EAP TTLS 3 - EAP AKA (future use)	
Connection List Number Of Active Entries	Number of connection list active entries		
Channel Frequency	The frequency (in kHz) that the CPE is tuned in on		
Transmit Power	The current transmit power [dbm] of the CPE		
Bandwidth	The bandwidth currently in use.	0- 5MHz 1- 7MHz 2- 10MHzy	
Selected Antenna	The current antenna selected.	1-7 Auto	
Downlink SNR	The SNR of the CPE	(-100) - (+100)	0
Downlink RSSI	The RSSI of the CPE	(-115) - (+50)	0

Table 11: WAN Device (Continued)

Parameter Name	Description	Range	Default
Max Uplink Rate	The maximum UL rate in the last 100 frames interval (There is no sliding window)	QPSK_1_2 rep 6 QPSK_1_2 rep 4 QPSK_1_2 rep 2 QPSK_1_2 QPSK_3_4 16QAM_1_2 16QAM_3_4 64QAM_1_2 64QAM_2_3 64QAM_3_4 64QAM_5_6	Not Set Yet
Max Downlink Rate	The maximum DL rate in the last 100 frames interval (There is no sliding window)	QPSK_1_2 rep 6 QPSK_1_2 rep 4 QPSK_1_2 rep 2 QPSK_1_2 QPSK_3_4 16QAM_1_2 16QAM_3_4 64QAM_1_2 64QAM_2_3 64QAM_3_4 64QAM_5_6	Not Set Yet
DistanceTo BS	The distance of the MS from the BS in meters. This value should be calculated based on the initial range response timing offset and should consider periodic offset correction.	0 - 100000 (meters)	0

Table 11: WAN Device (Continued)

Parameter Name	Description	Range	Default
Total Bytes Sent	The total number of bytes sent over the interface since the CPE was last reset.		
Total Bytes Received	The total number of bytes received over the interface since the CPE was last reset.		
Total Packets Sent	The total number of packets sent over the interface since the CPE was last reset.		
Total Packets Received	The total number of packets received over the interface since the CPE was last reset.		
Scanned BS ID Number Of Entries	The number of the BS in the best AU table (a table listing all the base stations in reach of the CPE)	0 - 40	0
Total Rx Crc 16 Errors	The total number of downlink received HARQ sub-bursts in which the CRC calculated does not match the CRC that appears in the sub-burst. CRC16 only appears in HARQ enabled connections.		
Total Rx Dropped Packets	The total number of MAC PDU MS dropped as a result of inactive downlink connections (Data and Management).		
Total Rx Hcs Errors	The total number of downlink received MAC PDU in which the HCS (Header Check Sequence) calculated does not match the HCS that appears in the PDU.		

Table 11: WAN Device (Continued)

Parameter Name	Description	Range	Default
Total Tx Discarded Bytes	The total number of discarded bytes in TX as a result of aging in queried connection..		
Total Tx Discarded Packets	The total number of packets discarded in TX as a result of aging..		
Scanned BS ID			
Scanned BS ID.i			
Antenna Number			
BS ID			
Channel BW			
Frequency (kHz)			
SNR (dB)			
Dl Per Rate Counters			
Dl Per Rate Counters.i			
Mcs Type			
Number of Sdu			
Ul Per Rate Counters			
Ul Per Rate Counters.i			
Mcs Type			
Number of Sdu			
Connection List			
Connection List.i			
Connection Num	Number of connection		
Connection Type	Type of connection		
Dl Bytes Received	The number of bytes received in queried connection		
Ul Bytes Dropped			
Ul Bytes Transmitted	The number of bytes transmitted in queried connection		

Table 12: Radio Types

HW type - Radio type	Frequency range	Power range (Max/Min)
	To retrieve center frequency add/subtract half bandwidth from bottom/top frequency	
2.3GHz ADC	2300000-2360000KHz	ODU:19/-26dBm
		IDU:23/-26dBm
2.5GHz ADC	2496000-2690000KHz	ODU:19/-26dBm
		IDU:24/-26dBm
5.2GHz ADC	5150000-5350000KHz	ODU: 18/-26dBm
3.3GHz SMI (0.8)	3300000-3400000KHz	ODU:20/-26dBm
		IDU:22/-26dBm
3.5GHz SMI (0.8)	3399500-3600000KHz	ODU:20/-26dBm
		IDU:22/-26dBm
3.6GHz SMI (0.8)	3600000-3800000KHz	ODU:20/-26dBm
		IDU:22/-26dBm
2.XGHz SMI (1.0)	2300000-2700000KHz	All IDU:
	Sub-Range 2.3GHz:	For 2.3GHz Sub-Range:
	2300000-2360000KHz	
	Sub-Range 2.5GHz:	For 2.5GHz Sub-Range:
	2496000-2690000KHz	24/-26dBm
3.XGHz SMI (1.0)	3300000-3800000KHz	All IDU:
		23/-26dBm.

Table 13: LAN Devices

Parameter Name	Description	Range	Default
LAN Ethernet Interface Config.1			
MAC Address	The physical address of the interface		
MAC Address Control Number	The MAC address control number		
Ethernet Actual Port Mode	Ethernet Port Mode	Link Down Full / 10 Full / 100 Half / 10 Halfl / 100	Link Down
Configured Port Mode	Enables to configure the Ethernet port to auto-negotiation mode or to set the duplex and speed.	0 = 10 Mbps Half Duplex 1 = 10 Mbps Full Duplex 2 = 100 Mbps Half Duplex 3 = 100 Mbps Full Duplex 4 = Auto	4 - Auto
DREG When Eth Phy Is Off	When enabled, the unit will Deregister itself when Ethernet “down” is detected	0 - Disabled 1 - Enabled	
WAN Up LAN Short Down	Enable/Disables the Ethernet phy after wireless link is established (to cause the host to send DHCP discover)	0 - Disabled 1 - Enabled	1
Statistics			
Bytes Sent	Total number of bytes sent over the interface since the CPE was last reset		

Table 13: LAN Devices (Continued)

Parameter Name	Description	Range	Default
Bytes Received	Total number of bytes received over the interface since the CPE was last reset		
Packets Sent	Total number of packets sent over the interface since the CPE was last reset		
Packets Received	Total number of packets received over the interface since the CPE was last reset		
LAN Host Config Management			
IP Interface.1.			
IP Address	IP Address for local Web provisioning		192.168.254.251
Subnet Mask	Subnet mask for IP Address of local Web provisioning		255.255.255.0

Table 14: Authentication

Parameter Name	Description	Range	Default
Domain Name	Default Domain Name used in TTLS for wimax authentication.	A string	WiMAX.com
Configured Domain Name	Configured Default Domain Name used in TTLS for wimax authentication. Becomes the actual value after reset	Any string	WiMAX.com
Username	CPE username used in TTLS for wimax authentication.	A string	MAC_address
Configured Username	Configured user name used in TTLS for wimax authentication.Becomes the actual value after reset.	Any string	MAC_address

Table 14: Authentication (Continued)

Parameter Name	Description	Range	Default
Configured Password	User password used in TTLS for wimax authentication. Becomes the actual value after reset.	Any string	quickynikynyoky

Table 15: Configure File Format Version

Parameter Name	Description	Range	Default
Major Ver	Major Version No. (Ignore if VendorConfigFile table exists.)	unsignedInt	1
Minor Ver	Minor Version No. (Ignore if VendorConfigFile table exists.)	unsignedInt	0

14.1.3 Inform Parameters

Table 16: Inform Parameters

Parameter	Value
Manufacturer	InternetGatewayDevice.DeviceInfo.Manufacturer
Manufacturer OUI	InternetGatewayDevice.DeviceInfo.ManufacturerOUI
Model Name	InternetGatewayDevice.DeviceInfo.ProductClass
Serial Number	InternetGatewayDevice.DeviceInfo.SerialNumber
Description	InternetGatewayDevice.DeviceInfo.Description
Name	InternetGatewayDevice.DeviceInfo.Name
Info Model Name	InternetGatewayDevice.DeviceInfo.ModelName
HW Version	InternetGatewayDevice.DeviceInfo.HardwareVersion
Product Variant	InternetGatewayDevice.DeviceInfo.X_0020D6_ProductVariant
Software Version	InternetGatewayDevice.DeviceInfo.SoftwareVersion
Spec Version	InternetGatewayDevice.DeviceInfo.SpecVersion
Uptime	InternetGatewayDevice.DeviceInfo.UpTime
Shadow Indication	InternetGatewayDevice.DeviceInfo.X_0020D6_ShadowIndication
Configuration was Changed	InternetGatewayDevice.DeviceInfo.X_0020D6_Dirty
Smart Card Status	InternetGatewayDevice.DeviceInfo.X_0020D6_SmartCardStatus

Table 16: Inform Parameters (Continued)

Parameter	Value
Oraganization	InternetGatewayDevice.DeviceInfo.X_0020D6_Organization
Address	InternetGatewayDevice.DeviceInfo.X_0020D6_Address
Country	InternetGatewayDevice.DeviceInfo.X_0020D6_Country
Con Req URL	InternetGatewayDevice.ManagementServer.ConnectionRequestURL
Serving BSID	InternetGatewayDevice.WANDevice.1.X_0020D6_Status.ServingBaseStationID

14.2 BreezeMAX 2000 CPEs

The following are the parameters and file transfer configurations for Alvarion's WiMAX 802.16e 2000 PRO and Si CPEs based on the Beceem chip.

14.2.1 File Transfer Configurations

- Firmware Download
  The required parameters for firmware download are:
  URL in the format http://ip_addr/virtual_dir/version.tar.gz, for example:
  http://192.168.10.21/acs/images-Alvarion-1.0.0.21.11-5.2.6_P1.tar.gz
  File Size in bytes, for example 6520625

- Configuration File Download
  The required parameter for firmware download is:
  URL in the format http://ip_addr/virtual_dir/config_file, for example:
  http://192.168.10.21/acs/nv.bin
  File Size in bytes, for example 70000

- Configuration File Upload
  The required parameter for firmware download is:
  URL in the format http://ip_addr/virtual_dir, for example:
  http://192.168.10.21/acs

When operating with File Management, the File Servers: Download server details and CPE upload server details must be configured with http://ip_addr/virtual_dir, for example: http://192.168.10.21/acs

14.2.2 List of Parameters

Table 17: Device Info

Parameter Name	Description	Type	Range	Default
Device Summary	The default value of the parameter on creation of an object instance via TR-069. If the default value is an empty string, this is represented by the symbol <Empty>. A hyphen indicates that no default value is specified. For a parameter in which no default value is specified, on creation of a parent object instance, the CPE MUST set the parameter to a value that is valid according to the definition of that parameter.			
LAN Device number of Entries	Number of instances of LAN Device			
WAN Device number of Entries	Number of instances of WAN Device			
WiMAX Forum Operator number of entries	The number of entries in the Operator Profile table			
Description	A full description of the CPE device	String of up to 256 characters	Alvarion WiMax <ModelName> <ProductVariant>	
Hardware Version	Hardware version number	String of up to 64 characters		
Manufacturer	The manufacturer of the CPE	String of up to 64 characters		Alvarion

Table 17: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Manufacturer OUI	Organizationally unique identifier of the device manufacturer. Represented as a six hexadecimal-digit value using all upper-case letters and including any leading zeros. The value MUST be a valid OUI	String of up to 64 characters		0020D6
Info Model Name	A string identifying the particular CPE model and version	String of up to 64 characters	CPE PRO SQ, CPE PRO SQ-L, CPE Si SQ, CPE Si SQ-L	
Product Class	Product Class of the CPE	String of up to 64 characters		Sequans
Provisioning Code	Identifier of the primary service provider and other provisioning information, which may be used by the ACS to determine service provider-specific customization and provisioning parameters.			
Serial Number	Serial number of the CPE	String of up to 64 characters		
Software Version	Firmware version number	String of up to 64 characters		
Up Time	Time in seconds since the CPE was last restarted	unsignedInt	>0	0
Vendor Config File Number of Entries	Defines the number of vendor configuration file entries	unsignedInt	0 - 1	1

Table 17: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
File Transfer Protocol		String of up to 16 characters	1 - TFTP 2 - FTP 3 - HTTP	1 - TFTP
Product Variant	Radio Type. A string identifying the particular CPE model and version	String of up to 64 characters	[2X|3X|5X]	
Shadow Indication	Indicates the active software version	Boolean	0 - Main 1 - Shadow	
Smart Card	SIM card status	unsignedInt	0 - Installed 1 - Not Installed 2 - Failed	
Vendor Config File				
Configuration File Date	Date and time when the content of the current version of this vendor configuration file was first applied by the CPE	DateTime	YYYY-MM-DDTHH:MM:SS	0001-01-01T00:00:00
Configuration File Description	A description of the vendor configuration file from XML file	String of up to 256 characters.		
Configuration File Name	Name of the vendor configuration file according to the name of the downloaded file	String of up to 64 characters.		family.xml
Configuration File Version	A string identifying the configuration file version currently used in the CPE	String of up to 16 characters.		1
Config File MD5 Signature	MD5 signature of the file	String of up to 16 characters.		No File Yet
Main SW File				
Main SW File Name	Name of the main software file	String of up to 64 characters.	K2_x_y_z_t.app	

Table 17: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Version of Main SW	A string identifying the main software file version currently used in the CPE	String of up to 16 characters.	x.y.z.t	
Main SW File Date	Date and time when the content of the current version of this main software file file was first applied by the CPE	DateTime		
Shadow SW File				
Shadow SW File Date	Date and time when the content of the current version of this shadow software file was first applied by the CPE	DateTime		
Shadow SW File Name	Name of the shadow software file.	String of up to 64 characters.	K2_x_y_z_w.app	
Version of Shadow SW	A string identifying the shadow software file version currently used in the CPE	String of up to 16 characters.	x.y.z.w	

Table 18: LAN Device

Parameter Name	Description	Range	Default
LAN Device			
Lan Device.i			
Lan Ethernet Interface Number of Entries	The number of Ethernet ports on the LAN side of the CPE	0 - 8	1
LAN WLAN Configuration Number of Entries	The number of WiFi ports (wireless LAN)on the LAN side of the CPE	0 - 1	1

Table 18: LAN Device (Continued)

Parameter Name	Description	Range	Default
Hosts			
Host Number of Entries	Number of entries in the host table		0
LAN Ethernet Interface Config.i			
Status	The status of the LAN port		
MAC Address	The physical address of the interface		
Stats			
Bytes Received	Total number of bytes received over the LAN port since the CPE was last reset		
Bytes Sent	Total number of bytes sent over the LAN port since the CPE was last reset		
Packets Received	Total number of packets received over the LAN port since the CPE was last reset		
Packets Sent	Total number of packets sent over the LAN port since the CPE was last reset		
LAN Host Config Management			
DHCP Lease Time	Specifies the lease time (in seconds) of the client assigned to the address	-1 20160 10080 2880 1440 720 120 60 30	

Table 18: LAN Device (Continued)

Parameter Name	Description	Range	Default
DHCP Server Enable	The DHCP server is enabled/disabled at the CPE	0 - False 1 - True	0
Domain Name	The domain name to give to clients on the LAN interface		
Max Address	The last address in the pool to be assigned by the DHCP server on the LAN interface		
Min Address	The first address in the pool to be assigned by the DHCP server on the LAN interface		
Subnet Mask	The subnet mask of the client's network		255.255.255.0
WLAN Configuration			
Basic Encryption Modes	The basic encryption mode.		
SSID	The current service set identifier in use by the connection. The SSID is an identifier that is attached to packets sent over the wireless LAN that functions as a "password" for joining a particular radio network (BSS).		
WEP Key Index	Each WEP key has an index number (1-4). The selected key is used for authentication and encryption on the Wi-Fi interface		

Table 18: LAN Device (Continued)

Parameter Name	Description	Range	Default
WEP Key	WEP key used to encrypt the data stream	A sequence of hexadecimal digits,10 characters for 40-bit encryption(64 bits HEX), or 26 characters for 104-bit encryption(128 bits HEX).	

Table 19: Management Server

Parameter Name	Description	Range	Default
Connection Request Password	The password used to authenticate an ACS making a Connection Request to the CPE.	String of up to 256 characters.	dps
Connection Request URL	HTTP URL for an ACS to make a Connection Request notification to the CPE,in the form: http://host:port/path The “host” portion of the URL MAY be the IP address for the management interface of the CPE in lieu of a host name.	String of up to 256 characters.	http://Management_IP_addr_of_CPE:8082/MAC_address_of_cpe
Connection Request User Name	The username used to authenticate an ACS making a Connection Request to the CPE.	String of up to 256 characters.	dps
Parameter Key	ParameterKey provides the NMS a reliable and extensible means to track changes made by the NMS.	String of up to 32 characters	0
NMS Password	The password used by the CPE to identify itself to the NMS for autherntication and authorization purposes		tr069

Table 19: Management Server (Continued)

Parameter Name	Description	Range	Default
Periodic Inform Enable	Whether or not the CPE must periodically send CPE information to Server using the Inform method call.	False True	True
Periodic Inform Interval	The interval (in seconds) when the CPE sends information to the server. The default defines the schedule as once a day.		86400
URL	The URL for the CPE to connect to the NMS		
NMS Username	The username used by the CPE to identify itself to the NMS for authentication and authorization purposes.		tr069
Address	The organization's address	String of up to 32 characters	Not set yet
Configured DSCP	The configures DSCP value to be used in the management connection.	0 - 63	6
Control Number	Used by the CPE to identify itself to the NMS for ongoing authentication of the CPE after the initial connection is completed		
Country	The country where the organization is located	String of up to 32 characters	
Default DSCP	The default DSCP value to be used in the management connection	0 - 63	6
DSCP	The actual DSCP value used in the management connection	0 - 63	6
Organization	The name of the organization to which the CPE belongs	String of up to 32 characters	

Table 20: Services

Parameter Name	Description	Range	Default
Voice Service			
Voice Service.i			
Capabilities			
Fax Pass Through	Enables faxes to be sent from the Phone port connection. Fax signals are sent over the VoIP network using the voice codec, just as if it were a voice call.	Enable Disable	
Fax T38	Enables or disables the use of T.38	Enable Disable	
Max Line Count			
Max Profile Count			
Max Session Count			
Max Sessions Per Line			
Signaling Protocols	The signaling protocol used to identify the state of connection	String of up to 256 characters	
SIP			
Role		String of up to 256 characters	
Transports		String of up to 256 characters	
Voice Profile			
Voice Profile.i			
RTP			
DSCP Mark	Diffserv code point to be used for outgoing SIP signalling packets	0 - 63	
SIP			
DSCP Mark	Diffserv code point to be used for outgoing RTP packets for this profile	0 - 63	

Table 20: Services

Parameter Name	Description	Range	Default
Time			
Current Local Time	The current local time. This field must have a value if NTP protocol is supported.	YYYY-MM-DDTHH:MM:SS	
NTP Server1	First NTP timeserver. Either a host name or IP address.		NTP server not found
CPE Time	The date and time of the CPE	YYYY-MM-DDTHH:MM:SS	
NTP Supported	The CPE supports/does not support NTP protocol and timing from the network.	True False	

Table 21: WAN Device

Parameter Name	Description	Range	Default
WAN Device			
WAN Device.i			
WAN connection number of entries	Number of instances of WANConnectionDevice in this WANDevice.		
WAN Common Interface Config			
Physical Link Status	The status of the physical link	Up Down	
Total Bytes Sent	Total number of bytes sent over the WAN port since the CPE was last reset		0
Total Bytes Received	Total number of bytes received over the WAN port since the CPE was last reset		0
Total Packets Sent	Total number of packets sent over the WAN port since the CPE was last reset		0

Table 21: WAN Device (Continued)

Parameter Name	Description	Range	Default
Total Packets Received	Total number of packets received over the WAN port since the CPE was last reset		0
WAN Access Type	Type of WAN Access	WiMAX	WiMAX
Rx Bit Rate	Current receive rate in bps		0
Tx Bit Rate	Current transmit rate in bps		0
Wan Connection Device.i			
WAN IP Connection Number of Entries	Number of WAN IP Connections		1
DataTransfer Mode	Defines whether the CPE is routing or bridging user data.	Router mode Bridge mode	Router mode
VOIP Transfer Mode	Defines whether the CPE is routing or bridging user VOIP.	Router mode Bridge mode	Router mode
Management Transfer Mode	Defines whether the CPE is routing or bridging management data.	Router mode Bridge mode	Router mode
WAN IP Connection.i			
Addressing Type	The parameter is used to assign an address to the WAN side interface of the CPE for this connection.	DHCP Static **Note:** Static option might not be supported	
Connection Status	Current status of the connection	Unconfigured Connecting Connected PendingDisconnect Disconneting Disconnected	Unconfigured

Table 21: WAN Device (Continued)

Parameter Name	Description	Range	Default
Possible Connection Types	A comma-separated list indicating the types of connections possible for this connection instance. Each element of the list is an enumeration of:Unconfigured, IP_Routed		Unconfigured, IP_Routed
External IP Address	This is the external IP address used by NAT for this connection. This parameter is configurable only if the AddressingType is Static.		
Subnet Mask	Subnet mask of the WAN interface. This parameter is configurable only if the AddressingType is Static.		
Default Gateway	The IP address of the default gateway for this connection. This parameter is configurable only if the AddressingType is Static.		
DNS Servers	The first address is of the Primary DNS Server and the second is the address of the Secondary DNS Server.		
MAC Address	The MAC Address of the WAN side of the IP Connection. Note: currently the CPE uses the same MAC address for both LAN side and WAN side connections.		
Stats			
Ethernet Bytes Received	The total number of Ethernet bytes received		

Table 21: WAN Device (Continued)

Parameter Name	Description	Range	Default
Ethernet Bytes Sent	The total number of Ethernet bytes sent		
Ethernet Packets Received	The total number of Ethernet packets received		
Ethernet Packets Sent	The total number of Ethernet packets sent		
WiMAX Interface Quality			
Downlink CINR	Downlink CINR rate in decibels (dBs)		
Downlink RSSI	The median level of the signal received by the SU based on 2sec histograms. Aggregated RSSI from both antennas.	20 - 106	
Last Rx Rate	Last received (Rx) bit rate of the WAN port		
Last Tx Rate	Last transmitted (Tx) bit rate of the WAN port		
WiMAX Interface Status			
Transmit Power	The current transmit power [dbm] of the CPE		
Channel Frequency	The frequency (in kHz) that the CPE is tuned in on.		
Bandwidth	The bandwidth currently in use.		Auto
WiMAX Interface Config			
Radio Module			
MAC Address	The MAC address of the WAN side of the CPE		

Table 21: WAN Device (Continued)

Parameter Name	Description	Range	Default
Model	Describes the radio module in use by the CPE. May have one of the values in the range	WiNetworks SMI 1.0 SMI DUAL SMI 0.7 new SMI 0.7 SMI 0.5 ADC Sequans Beceem	Beceem
End Frequency Band	The high end of the frequency band supported by the radio module in Khz.	2360 - 5875	
Frequency Band Name	A descriptive name for the supportive band		
Hardware Version	The hardware version of the radio module used by the CPE	String of up to 64 characters	
Start Frequency Band	The low end of the frequency band supported by the radio module in Khz.	2305 - 5725	

Table 22: WiMAX Operator Profile

Parameter Name	Description	Range	Default
WiMAX Operator Profile.i			
Subscription Parameters			
EAP Profile Number of Entries	Defines the number of EAP profiles		
EAP Profile.i			
Type	Select the authentication method to be used	NONE EAP-TTLS	EAP-TTLS
Identity	Defines the identity within the selected protocol	String of up to 253 characters	>Empty<
Shared Secret	Defines the password used within the selected protocol	String of up to 253 characters	
Realm	Defines the override realm that is sent in the EAP identity response packet. The identity response is:USERNAME@REALM	String of up to 256 characters	
WiMAX Network Parameters			
Channel Plan Number of Entries	Defines the number of channel plan entries	0 - 1	0
Discrete Frequencies Number of Entries	Defines the number of discrete frequencies entries	0 - 10	1
BS Selection			
Serving BS ID	The BS ID of the base station currently serving the CPE	3 =< Ni =< 255	0.0.0.0.0.0

14.2.3 Inform Parameters

Table 23: Inform Parameters

Parameter	Value
Manufacturer	InternetGatewayDevice.DeviceInfo.Manufacturer
Manufacturer OUI	InternetGatewayDevice.DeviceInfo.ManufacturerOUI
Model Name	InternetGatewayDevice.DeviceInfo.ProductClass
Serial Number	InternetGatewayDevice.DeviceInfo.SerialNumber
Provisioning Code	InternetGatewayDevice.DeviceInfo.ProvisioningCode
Software Version	InternetGatewayDevice.DeviceInfo.SoftwareVersion
Management URL	InternetGatewayDevice.ManagementServer.X_ManagementURL
Parameter Key	InternetGatewayDevice.ManagementServer.ParameterKey
Device Summary	InternetGatewayDevice.DeviceSummary
HW Version	InternetGatewayDevice.DeviceInfo.HardwareVersion
IP Address	InternetGatewayDevice.WANDevice.1.WANConnectionDevice.1.WANIPConnection.1.ExternalIPAddress
URL	InternetGatewayDevice.ManagementServer.URL
Con Req URL	InternetGatewayDevice.ManagementServer.ConnectionRequestURL
Con Req Username	InternetGatewayDevice.ManagementServer.ConnectionRequestUsername
NAT Detected	InternetGatewayDevice.ManagementServer.NATDetected
Spec Version	InternetGatewayDevice.DeviceInfo.SpecVersion

14.3 BreezeMAX 3000 CPEs

The following are the parameters and file transfer configurations for Alvarion's WiMAX 802.16e 3000 PRO and Si CPEs based on the Sequans chipset.

14.3.1 File Transfer Configurations

- Firmware Download:
  The required parameter for firmware download is:
  URL in the format http://ip_addr/virtual_dir/version, for example:
  http://192.168.10.21/acs/BIMAGE.R4.6.0.3-20569-v5.7.35ALV(WIXS-155)

- Configuration File Download:
  The required parameter for firmware download is:
  URL in the format http://ip_addr/virtual_dir/config_file, for example:
  http://192.168.10.21/acs/config

- Configuration File Upload:
  The required parameter for firmware download is:
  URL in the format http://ip_addr/virtual_dir, for example:
  http://192.168.10.21/acs

  When operating with File Management, the File Servers: Download server details and CPE upload server details must be configured with http://ip_addr/virtual_dir, for example: http://192.168.10.21/acs

14.3.2 List of Parameters

Table 24: Device Info

Parameter Name	Description	Type	Range	Default
Manufacturer	The manufacturer of the CPE	String of up to 64 characters		
Device Summary	The default value of the parameter on creation of an object instance via TR-069. If the default value is an empty string, this is represented by the symbol <Empty>. A hyphen indicates that no default value is specified. For a parameter in which no default value is specified, on creation of a parent object instance, the CPE MUST set the parameter to a value that is valid according to the definition of that parameter.	String of up to 1024 characters		
Manufacturer OUI	Organizationally unique identifier of the device manufacturer. Represented as a six hexadecimal-digit value using all upper-case letters and including any leading zeros. The value MUST be a valid OUI.	String of up to 64 characters		
Info Model Name	A string identifying the particular CPE model and version	String of up to 64 characters		

Table 24: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Description	A full description of the CPE device	String of up to 256 characters		
Product Class	Identifier of the class of product for which the serial number applies. For a given manufacturer, this parameter is used to identify the product or class of product over which the Serial Number parameter is unique.	String of up to 64 characters		
Serial Number	Serial number of the CPE	String of up to 64 characters		
Hardware Version	A string identifying the particular CPE model and version	String of up to 64 characters		
Software Version	A string identifying the software version currently installed in the CPE	String of up to 64 characters	x.x.x.x	
Modem Bootrom Version	A string identifying the version of the modem bootrom currently running in the CPE.	String of up to 64 characters		
Modem Firmware Version	A string identifying the version of the modem firmware currently installed in the CPE. This is applicable only when the modem firmware is separable from the overall CPE software.	String of up to 64 characters		

Table 24: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Provisioning Code	Identifier of the primary service provider and other provisioning information, which may be used by the Server to determine service provider-specific customization and provisioning parameters. If non-empty, this argument should be in the form of a hierarchical descriptor with one or more nodes specified. Each node in the hierarchy is represented as a 4-character sub-string, containing only numerals or upper-case letters. If there is more than one node indicated, each node is separated by a "." (dot).	String of up to 64 characters		
Up Time	Time in seconds since the CPE was last restarted	unsignedInt	0 - 4294967295 Sec	
Device Log	Return debug info log(s)	String of up to 32768 characters		
Spec Version	Represents the version of the specification implemented by the device	String of up to 16 characters	1.0	

Table 25: Management Server

Parameter Name	Description	Type	Range	Default
NMS User Name	The Username used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol.	String of up to 256 characters.		tr069
NMS User Password	The Password used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol. When read, this parameter returns an empty string, regardless of the actual value.	String of up to 256 characters.		tr069
Periodic Inform Enable	Enables to set whether or not the CPE must periodically send CPE information to the Server using the Inform method call.	Boolean	0 - Disable 1 - Enabled	1
Periodic Inform Interval	The duration in seconds of the interval for which the CPE must attempt to connect with the ACS and call the Inform method. Functional only if the Periodic Inform Enable parameter is enabled (checked).	unsignedInt		86400
Periodic Inform Time	Not implemented yet			

Table 25: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Parameter Key	The value of the ParameterKey argument from the most recent Set Parameter Values, Add Object, or Delete Object method call from the Server. If there have been no such calls, this value is empty	String of up to 32 characters.		
Connection request URL	HTTP URL for an ACS to make a Connection Request notification to the CPE,in the form: http://host:port/path The “host” portion of the URL MAY be the IP address for the management interface of the CPE in lieu of a host name.	String of up to 256 characters.		http://management_ip_addr_of_cpe:58603
Connection Request Username	Username used to authenticate an ACS making a Connection Request to the CPE.	String of up to 256 characters.		dps
Connection Request Password	The password used to authenticate an ACS making a Connection Request to the CPE. When read, this parameter returns an empty string, regardless of the actual value.	String of up to 256 characters.		dps

Table 25: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Upgrades Managed	Indicates whether or not the ACS will manage upgrades for the CPE. If true (1), the CPE SHOULD not use other means other than the ACS to seek out available upgrades. If false (0), the CPE MAY use other means for this purpose.	Boolean	0 - False 1 - True	0 - False
URL	URL for the CPE to connect to the ACS using the CPE WAN Management Protocol. This parameter MUST be in the form of a valid HTTP or HTTPS URL. The “host” portion of this URL is used by the CPE for validating the certificate from the ACS when using certificate-based authentication.	String of up to 256 characters.	ASCII representation of the following text: http://aaa.bbb.ccc.ddd/nnn	

Table 26: Services

Parameter Name	Description	Range	Default
Ethernet CS			
Service Rule			
Service Rule.i			
Allow	Enable or disable Ethernet CS	Disable Enable	
DSCP Remarking Enable	Enable or disable DSCP Remarking	Disable Enable	
DSCP Start Value		0 - 63	
DSCP Stop Value		0 - 64	
In PPPoE		Enable Disable	
In VLAN ID Start Value		1 - 4094 4096	
In VLAN ID Stop Value		1 - 4094 4096	
In VLAN Priority Start Value		0 - 7 8	
In VLAN Priority Stop Value		0 - 7 8	
Multicast Duplication Flag		Enable Disable	
Out VLAN ID		0 - 4094 4096	
Out VLAN Priority		0 -7 8	

Table 26: Services (Continued)

Parameter Name	Description	Range	Default
IP CS			
Service Rule			
Service Rule.i			
Allow	Enable or disable IP CS	Disable Enable	
DSCP Remarking Enable	Enable or disable DSCP Remarking	Disable Enable	
DSCP Start Value		0 - 63	
DSCP Stop Value		0 - 63	
In VLAN ID		1 - 4094 4096	
In VLAN Priority		0 - 7 8	
Multicast Duplication Flag		Enable Disable	

Table 27: Time

Parameter Name	Description	Range	Default
NTP Server 1	First NTP timeserver. Either a host name or IP address.	String of up to 64 characters	
Enable NTP from DHCP	Enable or disable NTP in DHCP	0 - Disable 1- Enable	0 - Disable
Current Local Time	The current date and time in the CPE's local time zone. This field must have a value if NTP protocol is supported.	YYYY-MM-DDTHH:MM:SS	
CPE Time Zone	The local time offset from UTC and name of the local time zone in the form: (GMT+hh:mm) LocalTimeZoneName	String of up to 128 characters	

Table 27: Time (Continued)

Parameter Name	Description	Range	Default
Daylight Savings Used	Indicates whether or not daylight savings time is in use in the CPE's local time zone	0 - no daylight saving 1 - daylight saving	1 - daylight saving
Daylight Savings Start	Date and time daylight savings time begins if used in local standard time. If daylight savings time is not used, this value is ignored.	YYYY-MM-DDTHH:MM:SS	
Daylight Savings End	Date and time daylight savings time ends if used in local standard time. If daylight savings time is not used, this value is ignored.	YYYY-MM-DDTHH:MM:SS	

Table 28: IP Ping Diagnostics

Parameter Name	Description	Range	Default
Diagnostics State	Indicates availability of diagnostic data. One of: Value may be set to "Requested" to initiate the diagnostic test. When writing, the only allowed value is "Requested". To ensure the use of the proper test parameters (the writable parameters in this object), the test parameters MUST be set either prior to or at the same time as (in the same SetParameterValues) setting the DiagnosticState to "Requested".	None Requested Complete Error_CannotResolveHostName	

Table 28: IP Ping Diagnostics (Continued)

Parameter Name	Description	Range	Default
Interface	Specifies the WAN IP-layer interface over which the test is to be performed. The content is the full hierarchical paramerter of the interface. The following is a WAN interface example:InternetGatewayDevice.WANDevice.1.WANConnectionDevice.11.WANIPConnection.111	String of up to 256 characters	
Host	Host name or address of the host to ping	String of up to 256 characters	
Number Of Repetitions	Number of repetitions of the ping test to perform before reporting the results		1
Timeout	Timeout in milliseconds for the ping test		
Data Block Size	Size of the data block in bytes to be sent for each ping.	1 - 65535	
DSCP	DiffServ codepoint to be used for the test packets. By default the CPE should set this value to zero.	0 - 64	
Success Count	Result parameter indicating the number of successful pings (those in which a successful response was received prior to the timeout) in the most recent ping test.	0 - (2^{32} - 1)	
Failure Count	Result parameter indicating the number of failed pings in the most recent ping test.	0 - (2^{32} - 1)	

Table 28: IP Ping Diagnostics (Continued)

Parameter Name	Description	Range	Default
Average Response Time	Result parameter indicating the average response time in milliseconds over all repetitions with successful responses of the most recent ping test. If there were no successful responses, this value MUST be zero.	0 - (2^{32} - 1)	
Minimum Response Time	Result parameter indicating the minimum response time in milliseconds over all repetitions with successful responses of the most recent ping test. If there were no successful responses, this value MUST be zero.	0 - (2^{32} - 1)	
Maximum Response Time	Result parameter indicating the maximum response time in milliseconds over all repetitions with successful responses of the most recent ping test. If there were no successful responses, this value MUST be zero.	0 - (2^{32} - 1)	

Table 29: WiMAX Parameters

Parameter Name	Description	Range	Default
AAA Cert Stat	The status of current rootcert, backup rootcert, current usrcert, and backup usrcert	0 - file does not exist 1 - file in SHA1 2 - file in SHA256	
AAA Identity	Identity used	String of up to 64 characters	
AAA Password	Password used to authenticate the CPE when making a connection to the BS.	String of up to 256 characters	
AAA Username	Username used to authenticate the CPE when making a connection to the BS.	String of up to 256 characters	
Active SF Number	Number of active Service Flows		
Allow STP	Enable or Disable STP	0 - Enable 1 - Disable	
Allow Telnet from WAN	Allow or disallow Telnet from WAN	0 - Disallow 1 - Allow	1- Disallow
Allow Web from WAN	Allow or disallow Web access from WAN	0 - Disallow 1 - Allow	1- Disallow
Authorization BS ID	Not implemented yet		
Auto Reboot Time	Local time of each day that the CPE will automatically reboot. Local time of each day that the CPE will automatically reboot. T	HH:MM:SS	
BS ID	Base station ID	String of up to 256 characters	
Channel Scanner	Get or set (add, remove, clear) Scanner Channels	String of up to 10240 characters	
CINR Deviation	CINR deviation in dBm		
CINR Level	CINR level in dBm	String of up to 256 characters	

Table 29: WiMAX Parameters (Continued)

Parameter Name	Description	Range	Default
CPE Mode	CPE functioning mode	String of up to 256 characters	
DDNS Hostname	Hostname registered with the DDNS Server	String of up to 256 characters	
DDNS Password	Password used to authenticate the CPE when requesting DDNS to the DDNS Server	String of up to 256 characters	
DDNS Server	Get or set service provider	String of up to 256 characters	
DDNS Username	Username used to authenticate the CPE when requesting DDNS to the DDNS Server	String of up to 256 characters	
Device Log	Console log	String of up to 4096 characters	
DHCPS DNS	First and second Domain Name Server configured in the CPE, in the form: xxx.xxx.xxx.xxx	String of up to 256 characters	
DL Data Rate	Downlink Data Rate in mbps		
DL Modulation	Current Downlink modulation in use	String of up to 256 characters	
DMZ	Enable/disable DMZ, enable/disable ICMP redirect, and set DMZ Host IP	String of up to 256 characters	
Enable Auto Reboot	Enable or disable the CPE's autoReboot ability	0 - Disable 1 - Enable	0 - Disable
Enable DDNS	Enable/disable Dynamic DNS	0 - Disable 1 - Enable	0 - Disable
Enable Idle Auto	Determine whether or not the CPE can automatically enter idle mode	0 - Disable 1 - Enable	0 - Disable

Table 29: WiMAX Parameters (Continued)

Parameter Name	Description	Range	Default
Enable Idle Inform	Determine whether or not the TR069 client will send periodic inform when the CPE is in idle mode	0 - Will not send periodic inform 1 - Will send periodic inform	0 - Will not send periodic inform
Enable Management DHCPC	Determines whether the Management NIC IP is DHCP or Static	0 - Disabled 1 - Enabled	
Enable Management VNIC	Enable or disable the Virtual Management NIC	0 - Disabled 1 - Enabled	
Enable Pkms Dbg Flip Msk	Determine whether or not to flip the way of reading the Master Session Key	0 - Disable 1 - Enable	0 - Disable
Enable SNMP	Enable or disable the SNMP in the CPE	0 - Disable 1 - Enable	0 - Disable
Enable WAN DHCPC	Enable or disable WAN DHCPC	0 - Disabled 1 - Enabled	
Factory Reset	Factory reset the CPE	0 - Do not reset 1 - Reset the CPE to factory default	
Firewall Rule	Enable/disable firewall and setting firewall rules	String of up to 7040 characters	
Hand Over Enable	Enable or disable HandOver ability of the CPE	0 - Enable 1 - Disable	0 - Enable
HTTP Password	Password used to login the CPE's WEB-GUI		
HTTP Username	Username used to login the CPE's WEB-GUI	String of up to 256 characters	
Idle Auto Delay	The time (in ms) without any traffic until the CPE enter idle mode	String of up to 256 characters	
LAN Bytes Received	LAN Downlink data transferred in Bytes since last time		

Table 29: WiMAX Parameters (Continued)

Parameter Name	Description	Range	Default
LAN Bytes Sent	LAN Uplink data transferred in Bytes since last time		
LAN IP	LAN IP of the CPE		
LAN Packets Received	LAN Downlink packets transferred since the last time this value was retrieved		
LAN Packets Sent	LAN Uplink packets transferred since since the last time this value was retrieved		
Linked Frequency	Frequency currently used to link BS	String of up to 256 characters	
Management DSCP	Management WAN DSCP marking of the CPE	Integer	
Management Gateway	Management WAN Gateway of the CPE	String of uo to 256 characters	
Management IP	Management WAN IP of the CPE	String of uo to 256 characters	
Management Netmask	Management WAN Netmask of the CPE	String of uo to 256 characters	
MTU Size	Max transmission unit size	68 - 1500	
Neighbor BS Number of Entries	Number of neighbor BS entries		
NTP IF	NTP interface	String of up to 256 characters	
Port Forwarding	Enable/disable port forwarding and setting port forwarding rule.	String of up to 2250 characters	
Port Trigger	Enable/disable port trigger and setting port trigger rules	String of up to 2775 characters	
RSSI level	RSSI level in dBm of the serving BS	String of up to 256 characters	
Run Script			
SNMP Read Only Community	The read-only community string of SNMP	String of up to 256 characters	public

Table 29: WiMAX Parameters (Continued)

Parameter Name	Description	Range	Default
SNMP Write Only Community	The read-write community string of SNMP	String of up to 256 characters	private
Speed Test	The current FTP Uplink and Downlink speed the CPE can currently achieve	String of up to 256 characters	
Total DL Bytes	WAN Downlink data transferred in Bytes since the last time this value was retrieved		
Total DL Packets	WAN Downlink packets transferred since since the last time this value was retrieved		
Total UL Bytes	WAN Uplink data transferred in Bytes since the last time this value was retrieved		
Total UL Packets	WAN Uplink packets transferred since since the last time this value was retrieved		
UL Data Rate	Uplink Data Rate in mbps		
UL Modulation	Current Uplink modulation in use	String of up to 256 characters	
UL Tx Power	Current Uplink Tx Power dBm	String of up to 256 characters	
Validate CA Date Ends	Determine whether or not the valid duration of the certificate should be checked	0 - Do not check 1 - Check	1 - Check
Validate Server Cert Enable	Determine whether or not the rootcert should be checked when authenticating	0 - Do not check 1 - Check	1 - Check
WAN DHCP	Enable or disable DHCP on WAN	0 - Disable 1 - Enable	
WAN DSCP	Data WAN DSCP marking of the CPE	Integer	

Table 29: WiMAX Parameters (Continued)

Parameter Name	Description	Range	Default
WAN Gateway	Data WAN Gateway of the CPE	String of up to 256 characters	
WAN IP	Data WAN IP of the CPE	String of up to 256 characters	
WAN Netmask	Data WAN Netmask of the CPE	String of up to 256 characters	
Neighbor BS Info			
Neighbor BS Info.i			
BS ID	Base Station ID number	String of up to 256 characters	
CINR Level	CINR of the base station in dBs	String of up to 256 characters	
RSSI Level	The RSSI of the base station in dBs	String of up to 256 characters	
Debug			
Radio Trace	The path and file name where the CPE stores the radio trace.	String of up to 64 characters	The default path and file name is: /tffs/cwmpc/cwmpLogDump
Radio Trace Activation	Radio trace activation/deactivation.	0 - activation 1 - deactivation	0 - activation
Radio Trace Buffer Size	Size of the radio trace buffer.		

14.3.3 Inform Parameters

Table 30: Inform Parameters

Parameter	Value
Manufacturer	InternetGatewayDevice.DeviceInfo.Manufacturer
Manufacturer OUI	InternetGatewayDevice.DeviceInfo.ManufacturerOUI
Model Name	InternetGatewayDevice.DeviceInfo.ProductClass
Serial Number	InternetGatewayDevice.DeviceInfo.SerialNumber
Info Model Name	InternetGatewayDevice.DeviceInfo.ModelName
Description	InternetGatewayDevice.DeviceInfo.Description
HW Version	InternetGatewayDevice.DeviceInfo.HardwareVersion
Software Version	InternetGatewayDevice.DeviceInfo.SoftwareVersion
Modem Firmware Version	InternetGatewayDevice.DeviceInfo.ModemFirmwareVersion
Modem Bootrom Version	InternetGatewayDevice.DeviceInfo.ModemBootromVersion
Spec Version	InternetGatewayDevice.DeviceInfo.SpecVersion
Provisioning Code	InternetGatewayDevice.DeviceInfo.ProvisioningCode
Parameter Key	InternetGatewayDevice.ManagementServer.ParameterKey
Con Req URL	InternetGatewayDevice.ManagementServer.ConnectionRequestURL
Radio Trace Activation	InternetGatewayDevice.X_GTK_WiMAX_Param.Debug.X_GTK_Radio_trace_activation
Radio Trace Buffer Size	InternetGatewayDevice.X_GTK_WiMAX_Param.Debug.X_GTK_Radio_trace_buffer_size
Product Class	InternetGatewayDevice.DeviceInfo.ProductClass
Management IP	InternetGatewayDevice.X_GTK_WiMAX_Param.X_GTK_MGMT_IP
Management Mask	InternetGatewayDevice.X_GTK_WiMAX_Param.X_GTK_MGMT_NetmaskI
Management Gateway	InternetGatewayDevice.X_GTK_WiMAX_Param.X_GTK_MGMT_Gateway
WAN IP	InternetGatewayDevice.X_GTK_WiMAX_Param.X_GTK_WANIP
WAN Netmask	InternetGatewayDevice.X_GTK_WiMAX_Param.X_GTK_WAN_Netmask
WAN Gateway	InternetGatewayDevice.X_GTK_WiMAX_Param.X_GTK_WAN_Gateway

14.4 BreezeMAX Si 4000 CPEs

The following are the parameters and file transfer configurations for Alvarion's WiMAX 802.16e 1000 PRO and Si CPEs based on the Beecem chip.

14.4.1 File Transfer Configurations

Before you can upload or download files to of from BreezeMAX Si 4000 CPEs, you must configure the StarACS computer IIS server according to the instructions in Section 3.

- Firmware Download:
  The required parameter for firmware download is:
  http://< address>/<alias>/<file name>Configuration File Download:

- Configuration File Upload:
  The required parameter for firmware download is:
  http://< address>/<alias>/<file name>

14.4.2 List of Parameters

Table 31: Internet Gateway Device

Parameter Name	Description	Type	Range	Default
Device Summary	The default value of the parameter on creation of an object instance via TR-069. If the default value is an empty string, this is represented by the symbol <Empty>. A hyphen indicates that no default value is specified. For a parameter in which no default value is specified, on creation of a parent object instance, the CPE MUST set the parameter to a value that is valid according to the definition of that parameter.	String of up to 1024 characters		
LAN Device Number of Entries	Number of instances of LAN Device	unsignedInt		
Operator Profile Number of Entries	The number of entries in the Operator Profile table			
WAN Device Number of Entries	Number of instances of WAN Device	unsignedInt		

Table 32: Device Info

Parameter Name	Description	Type	Range	Default
Description	A full description of the CPE device	String of up to 256 characters		
First Use Date	Date and time in UTC that the CPE first successfully established both an IP-layer network connection and acquired an absolute time reference using NTP or equivalent over that network connection. The CPE may reset this date after a factory reset. If NTP or equivalent is not available, this parameter, if present, should be set to the Unknown Time value.	DateTime	YYYY-MM-DDTHH:MM:SS	
Hardware Version	A string identifying the particular CPE model and version.	String of up to 64 characters		
Manufacturer	The manufacturer of the CPE	String of up to 64 characters		
Manufacturer OUI	Organizationally unique identifier of the device manufacturer. Represented as a six hexadecimal-digit value using all upper-case letters and including any leading zeros. The value MUST be a valid OUI.	String of up to 64 characters		
Info Model Name	Model name of the CPE	String of up to 64 characters		

Table 32: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Modem Firmware Version	A string identifying the version of the modem firmware currently installed in the CPE. This is applicable only when the modem firmware is separable from the overall CPE software.	String of up to 64 characters		
Product Class	Identifier of the class of product for which the serial number applies. For a particular manufacturer, this parameter is used to identify the product or class of product over which the Serial Number parameter is unique.	String of up to 64 characters		
Provisioning Code	Identifier of the primary service provider and other provisioning information, which may be used by the ACS to determine service provider-specific customization and provisioning parameters.	String of up to 64 characters		
Serial Number	Serial number of the CPE	String of up to 64 characters		

Table 32: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Software Version	A string identifying the software version currently installed in the CPE.	String of up to 64 characters	Dot-delimited integers, where each successive integer represents a more minor category of variation. For example, 3.0.21 where the components mean: Major.Minor.Build	
Spec Version	Represents the version of the specification implemented by the device. **Note**: Currently 1.0 is the only available version.	String of up to 16 characters	1.0	1.0
Up Time	Time in seconds since the CPE was last restarted.	unsignedInt		
Vendor Config File Number of Entries	Defines the number of vendor configuration file entries	unsignedInt		1

Table 33: Firewall

Parameter Name	Description	Type	Range	Default
Firewall				
Config	Firewall Settings. ■ If "Low", all Outbound traffic and pinhole-defined Inbound traffic is allowed. ■ If "Off", all Inbound and Outbound traffic is allowed, and the CPE is only protected by NAT settings. Vendors can add extra configuration levels.	String	Low Off	

Table 34: IP Diagnostics

Parameter Name	Description	Range	Default
Average Response Time	Result parameter indicating the average response time in milliseconds over all repetitions with successful responses of the most recent ping test. If there were no successful responses, the value should be zero.		
Data Block Size	Size of the data block in bytes to be sent for each ping.	1 - 65535	

Table 34: IP Diagnostics (Continued)

Parameter Name	Description	Range	Default
Diagnostics State	Indicates availability of diagnostic data. When writing, the only value allowed is "Requested". The value may be set to "Requested" to initiate the diagnostic test. The test parameters must be set either prior to or at the same time as setting the Diagnostic State to "Requested" (in the same Set Parameter Values).	None Requested Complete Error_CannotResolveHostName	
Failure Count	Result parameter indicating the number of failed pings in the most recent ping test.		
Host	Host name or address of the host to ping	String of up to 256 characters	
Interface	Specifies the WAN IP-layer interface over which the test is to be performed. The content is the full hierarchical paramerter of the interface.	InternetGatewayDevice.WANDevice.1.WANConnectionDevice.1.WANIPConnection.1 InternetGatewayDevice.LANDevice.1.LANHostConfigManagement.IPInterface.1	
Maximum Response Time	Result parameter indicating the maximum response time in milliseconds over all repetitions with successful responses of the most recent ping test. If there were no successful responses, this value should be zero.		

Table 34: IP Diagnostics (Continued)

Parameter Name	Description	Range	Default
Minimum Response Time	Result parameter indicating the minimum response time in milliseconds over all repetitions with successful responses of the most recent ping test. If there were no successful responses, this value should be zero.		
Number of Repetitions	Number of repetitions of the ping test to perform before reporting the results.		1
Success Count	Result parameter indicating the number of successful pings (those in which a successful response was received prior to timeout) in the most recent ping test.		

Table 35: Management Server

Parameter Name	Description	Range	Default
NMS User Name	The Username used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol. This username is used only for HTTP-based authentication of the CPE. **Note** : On a factory reset of the CPE, the value of this parameter might be reset to its factory value. If the ACS modifies the value, it should be prepared to accommodate the situation that the original value is restored as the result of a factory reset.		tr069

Table 35: Management Server (Continued)

Parameter Name	Description	Range	Default
NMS User Password	The Password used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol. This password is used only for HTTP-based authentication of the CPE. When read, this parameter returns an empty string, regardless of the actual value. **Note:** On a factory reset of the CPE, the value of this parameter might be reset to its factory value. If the ACS modifies the value of this parameter, it should be prepared to accommodate the situation that the original value is restored as the result of a factory reset.		tr069
Periodic Inform Enable	Enables to set whether or not the CPE must periodically send CPE information to the ACS using the Inform method call.	0 - Disable 1 - Enable	1
Periodic Inform Interval	The duration in seconds of the interval for which the CPE must attempt to connect with the ACS and call the Inform method. Functional only if the Periodic Inform Enable parameter is enabled (checked).		

Table 35: Management Server (Continued)

Parameter Name	Description	Range	Default
Periodic Inform Time	An absolute time reference in UTC to determine when the CPE should initiate the Inform method calls. Each Inform call must occur at this reference time plus or minus an integer multiple of the Periodic Inform Interval. This parameter is used only to set the "phase" of the periodic Informs. The actual value can be arbitrarily set far into the past or future. For example, if the Periodic Inform Interval paramter is 86400 (a day) and Periodic Inform Time is set to UTC midnight on a particular day (in the past, present, or future) then periodic Informs will occur every day at UTC midnight. These will begin at the following midnight, even if the value of the parameter refers to a day in the future. The Unknown Time value indicates that no particular time reference has been specified, i.e. the CPE can locally select the time reference, and is required only to adhere to the specified Periodic Inform Interval. If absolute time is not available to the CPE, its periodic Inform behavior must be the same as if the PeriodicInformTime parameter was set to the Unknown Time value.	YYYY-MM-DDTH H:MM:SS	

Table 35: Management Server (Continued)

Parameter Name	Description	Range	Default
URL	URL for the CPE to connect to the ACS using the CPE WAN Management Protocol. This parameter MUST be in the form of a valid HTTP. The "host" portion of this URL is used by the CPE for validating the ACS certificate when using SSL or TLS. **Note:** On a factory reset of the CPE, the value of this parameter might be reset to its factory value. If an ACS modifies the value of this parameter, it should be prepared to accommodate the situation that the original value is restored as the result of a factory reset.	ASCII representation of the following text: http://aaa.bbb.ccc.ddd/nnn	
DSCP Mark	Diffserv code point used for outgoing management flow packets	0 - 63	
Dm Switch	DM switch used to switch DM client of the CPE.		
Connection Request Password	The password used to authenticate an ACS making a Connection Request to the CPE. When read, this parameter returns an empty string, regardless of the actual value.		dps
Connection Request URL	HTTP URL for an ACS to make a Connection Request notification to the CPE,in the form: http://host:port/path The “host” portion of the URL MAY be the IP address for the management interface of the CPE in lieu of a host name.		http://Mgmt_IP_CPE:50003/creq
Connection Request Username	Username used to authenticate an ACS making a Connection Request to the CPE.		dps

Table 35: Management Server (Continued)

Parameter Name	Description	Range	Default
Parameter Key	Provides the ACS with a reliable and means of tracking changes made by the ACS. The value should be equal to the value of the Parameter Key argument from the most recent successful Set Parameter Values, Add Object, or Delete Object method call from the ACS. Parameter Key is only set to the value specified in the corresponding method arguments if the method completes successfully and no fault response is generated. If a method call does not complete successfully (implying that the changes requested in the method did not take effect), the value of Parameter Key should not be modified. The CPE should only modify the value of Parameter Key as a result of Set Parameter Values, Add Object, Delete Object, or due to a factory reset. On factory reset, the value of Parameter Key should be set to empty.		
Manageable Device	Each entry in this table corresponds to a distinct LAN Device.		
Manufacturer OUI	Valid organizationally unique identifier of the Device manufacturer as provided to the Gateway by the Device.	A six hexadecimal-digit value using all upper-case letters and including any leading zeros.	
Serial Number	Serial number of the device as provided to the gateway by the device		
Product Class	Identifier of the class of product for which the device's serial number applies as provided to the gateway by the device. If the device does not provide a Product Class, then this parameter should be left empty.		

Table 36: Services

Parameter Name	Description	Range	Default
Services			
Voice Service	The top-level object for VoIP CPE.		
Voice Service.i			
Voice Profile Number of Entries	The number of instances Voice Profile entries		
Voice Profile	Object associated with a collection of voice lines with common characteristics. Support for adding and removing profiles is conditional on whether more than one profile is supported as indicated by InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i} By default, a single Voice Profile object is present in a Voice Service, initially in the disabled state.		
Voice Profile.i			
DTMF Method	The method by which DTMF digits should be passed.	If the parameter DTMFMethodG711 is not empty, then this parameter applies only when the current codec is NOT G.711. The value "SIPInfo" is applicable only if the SignalingProtocol is SIP. This parameter is only applicable for a VoIP endpoint.	

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
Digit Map	The digit map controlling the transmission of dialed digit information. The string defines the criteria to be met as digits are collected before an outgoing request (e.g., a SIP INVITE) can be initiated. This parameter only applies if the device supports a dialing mechanism for which a dialing plan is required and if the device does not already support a dialing plan mechanism for this profile. If this object is supported, the capability InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile{i}.DigitMap MUST be equal to true. This parameter is only applicable for a VoIP endpoint.		
Line **Line.i**	Object associated with a distinct voice line. Support for adding and removing lines is conditional on whether the CPE supports more than one line in total as indicated by InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i}.Line.{i} By default, on creation of a given Voice Profile, a single Line object is present, initially in the disabled state. Applicable only for a VoIP endpoint.		
Enable	Enables or disables the line, or places it into a quiescent state.	0 - Disable 1 - Enable	
Status	Indicates the status of the line	De-Registered Registered	

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
Calling Features	Voice line parameters related to optional endpoint based calling features		
Call Forward on Busy Number	Directory number to which all incoming calls to this line should be forwarded if Call Forward On Busy Enable is true and the line is busy. This parameter should not be present if the CPE does not support endpoint based call forwarding.		
Call Forward on No Answer Number	Directory number to which all incoming calls to this line should be forwarded if Call Forward On No Answer Enable is true and there is no local answer. This parameter should not be present if the CPE does not support endpoint based call forwarding		
Call Waiting Enable	Enables or disables call waiting in the endpoint. This parameter should not be present if the CPE does not support endpoint managed call waiting.	0 - Disable 1 - Enable	
Caller ID Name	String used to identify the caller.		
Anonymous Call Enable	Enables or disables Anonymous Call capability in the endpoint. This parameter should not be present if the CPE does not support endpoint based Anonymous Call capability.	0 - Disable 1 - Enable	

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
Anonymous Call Block Enable	Enables or disables Anonymous Call Block capability in the endpoint. This parameter should not be present if the CPE does not support endpoint based Anonymous Call Block capability.	0 - Disable 1 - Enable	
Call Forward on Busy Enable	Enables or disables call forwarding-on-busy by the endpoint. This parameter should not be present if the CPE does not support endpoint based call forwarding.	0 - Disable 1 - Enable	
Call Forward on No Answer Enable	Enables or disables call forwarding-on-no-answer by the endpoint. This parameter should not be present if the CPE does not support endpoint based call forwarding.	0 - Disable 1 - Enable	
Call Forward Unconditional Enable	Enables or disables call forwarding by the endpoint. This parameter should not be present if the CPE does not support endpoint based call forwarding.	0 - Disable 1 - Enable	
Call Forward Unconditional Number	Directory number to which all incoming calls to this line should be forwarded if CallForwardUnconditional Enable is true. This parameter should not be present if the CPE does not support endpoint based call forwarding	0 - Disable 1 - Enable	

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
Do Not Disturb Enable	Enables or disables Do Not Disturb capability in the endpoint. This parameter should not be present if the CPE does not support endpoint based Do Not Disturb capability.	0 - Disable 1 - Enable	
Automatic Call Back	Enables or disables Automatic Call Back in the endpoint . This parameter should not be present if the CPE does not support endpoint based Automatic Call Back capability.	0 - Disable 1 - Enable	
Automatic Recall	Enables or disables Automatic Recall in the endpoint . This parameter should not be present if the CPE does not support endpoint based Automatic Recall capability.	0 - Disable 1 - Enable	
Call Block Incoming List	Blocks incoming calls from the listed numbers.	String of up to 256 digits	
Call Block Outgoing List	Blocks outgoing calls from the listed numbers.		
Call Hold	Enables or disables call hold in the endpoint. This parameter should not be present if the CPE does not support endpoint managed call hold.	0 - Disable 1 - Enable	
Call Switching	Sets a shortcut (e.g. *66) to enable switching from one phone to another without hanging up.		
Call Waiting TO	Timeout in seconds		

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
E 911	Emergency number. When dialing “911” this call will be routed to the emergency service		
Inter Digit TO	Timeout in seconds		
Redial	A shortcut (e.g. *53) that defines redialing to the last number.		
Call Forward on No Answer Timeout	The number of of rings before considering there to be no answer for call forwarding-on-no-answer. This parameter should not be present if the CPE does not support endpoint based call forwarding		
Codec List **List.i**	Table describing the set of codecs enabled for use with this line. Each entry in this table refers to a distinct combination of codec and bit rate. When a Line is created, this object must be populated with the set of supported codecs matching the InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i}.Line.{i}.Codec.List.{i} table. The ACS may restrict and/or prioritize the codec support for this profile using this object. Applicable only for a VoIP endpoint.		
Codec	Identifier of the codec type. The value must match that of the corresponding entry in the InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i}.Line.{i}.Codec.List.{i}.Codec table.		
Enable	Enables or disables the use of this combination of codec parameters	0 - Disable 1 - Enable	

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
Entry ID	Unique identifier for each entry in the table. The value must match that of the corresponding entry in the InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i}.Line.{i}.Codec.List.{i}.EntryID table.		The default entry order is: T38, iLBC, G729E, G729, G726-40, G726-32, G726-24, G726-16, PCMU, PCMA.
Packetization Period	Comma-separate list of supported packetization periods, in milliseconds, or continuous ranges of packetization periods as defined in InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i}.Line.{i}.Codec.List.{i}.PacketizationPeriod The set of packetization periods can be restricted by modifying the value of this parameter to a more restricted set of values than is listed. The CPE ignores any values or portions of ranges outside of those specified.	Defined in InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i}.Line.{i}.Codec.List.{i}.PacketizationPeriod .	T38 (20,30,40,10). iLBC (20,30). G729E (20,10). G729 (20,10). G726-40 (20). G726-32 (20). G726-24 (20). G726-16 (20). PCMU (20, 30, 10). PCMA (20,30,10)

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
Priority	Indicates the priority for the combination of codec parameters, where 1 is the highest priority. When the priority differs between entries in this table, the CPE will use the highest priority (the lowest number) entry among those supported by the remote endpoint and consistent with the available bandwidth. When the priorities for multiple entries are equal, the CPE can apply a local criterion for choosing between them.		
SIP	Voice line parameters that are specific to SIP call signaling.		
Authentication Password	Password used to authenticate the connection to the server. When read, this parameter returns an empty string, regardless of the actual value.		
Authentication Username	Username used to authenticate the connection to the server.		
User Account	SIP user account		
Fax T38	T.38 Fax information for devices that support T.38 relay. Applicable only to a VoIP endpoint.		
Enable	Enables or disables the use of T.38.	0 - Disable 1 - Enable	

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
RTP	Voice profile parameters related to the voice stream sent via RTP. Applicable only for a VoIP endpoint.		
DSCP Mark	Diffserv code point to be used for outgoing RTP packets for this profile. It is recommended that by default the DSCP for RTP traffic be set to the value to indicate EF traffic.	0 - 63	
Local Port Max	Top of port range to be used for incoming RTP streams for this profile.	0 - 65535	
Local Port Min	Base of port range to be used for incoming RTP streams for this profile.	0 - 65535	
Telephone Event Payload Type	Payload type to be used for RTP telephone events. This parameter indicates the payload type to be used for DTMF events if RFC 2833 transmission of DTMF information is in use.	0 - 127	
DSP Nation	National protocol definition.		Default
RTCP	Voice profile parameters related to RTCP. Applicable only for a VoIP endpoint.		
Enable	Enables or disables RTCP.	0 - Disable 1 - Enable	
DSCP Mark	Diffserv code point to be used for outgoing RTCP packets for this profile.	0 - 63	

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
Voice Profile			
Voice Profile.i			
SIP	Voice profile parameters that are specific to SIP user agents.		
DSCP Mark	Diffserv code point to be used for outgoing SIP packets for this profile.	0 - 63	
Registrar Server	Host name or IP address of the SIP registrar server. If empty, the CPE obtains all of the registrar server configuration information, including host name or IP address, port, and transport protocol, from the corresponding Proxy Server parameters (Proxy Server, Proxy Server Port, and Proxy Server Transport), ignoring all of the registrar server parameters (Registrar Server, Registrar Server Port and Registrar Server Transport)		

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
Registrar Server Port	Destination port to be used in connecting to the SIP registrar server. If the Registrar Server parameter is empty, the CPE obtains all of the registrar server configuration information, including host name or IP address, port, and transport protocol, from the corresponding Proxy Server parameters (Proxy Server, Proxy Server Port, and Proxy Server Transport), ignoring all of the registrar server parameters (Registrar Server, Registrar Server Port and Registrar ServerT ransport).		
User Agent Domain	CPE domain string. If empty, the CPE uses its IP address as the domain.		

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
Outbound Proxy	Host name or IP address of the outbound proxy. If a value is specified (not empty), the SIP endpoint sends all SIP traffic (requests and responses) to the host indicated by this parameter and the port indicated by the Outbound Proxy Port parameter. This is done regardless of the routes discovered using normal SIP operations, including use of Route headers initialized from Service-Route and Record-Route headers previously received. The Outbound Proxy value is not used to generate the URI placed into the Route header of any requests.		
Outbound Proxy Port	Destination port to be used in connecting to the outbound proxy. This parameter is ignored unless the value of the Outbound Proxy parameter is not empty.		
Register Expires	Register request Expires header value, in seconds.		
DSP Setting (Digital Signal Processing)			
AGC Enable	Enables or disables Automatic Gain Control. Voice signal will be enlarged by DSP so that the voice is louder and clearer	0 - Disable 1 - Enable	0 - Disable

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
EC Length	Echo Cancellation - The delay time (in miliseconds) for voice echo cancellation. A voice echo can be created on some two-wire phone loops, which becomes increasingly louder and annoying when there is a long delay. If voice echo is a problem during a call, you can adjust this parameter to try and reduce or remove it.	16, 32, 48	32
JBAp	Jitter Buffer Adaptation Period: controls the speed (in milliseconds) at which the jitter buffer can adapt downwards when current network conditions allow. The larger the value, the slower the jitter buffer adapts down, when jitter decreases.	Max value of AP is 65.535	max. 10000ms (10 seconds) min.1000ms (1 second)
JB Del Mode	Determines how frames are deleted when jitter buffer adapts down: ■ Hardware auto - places more emphasis on maximum delay, which may negatively affect audio quality. ■ Software auto - places more emphasis on audio quality, while maximum delay may be exceeded	hardware auto software auto	

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
JB Del Thold	JB Deletion Threshold (in miliseconds). Frames exceeding the deletion threshold are deleted immediately. Audio quality may be negatively affected.	From the DelayMax value up to 500 ms	
JB Delay Init	The initial delay of the jitter buffer in miliseconds. The system holds the 1st received packet for the time defined in DelayInit before sending it out.		
JB Delay Max JB Delay Min	Jitter Buffer control: JB delays the arriving packets so that the end user experiences a clear connection with very little sound distortion. Set the minimum and maximum jitter buffer delay time (in miliseconds)		
NS Enable	Enables or disables Noise Suppression (eliminating noise).	0 - Disable 1 - Enable	0 - Disable
Rx Gain	Enter a value (in db) to control the voice receiving quality	-5 to +5	0
Tx Gain	Enter a value (in db) to control the voice transmission quality	-5 to +5	0
VAD Enable	Enables or disables Voice Activity Detection . VAD-detects the periods of silence in the audio stream so that it is not transmitted over the network	0 - Disable 1 - Enable	1 - Enable

Table 36: Services (Continued)

Parameter Name	Description	Range	Default
VAD Time	The period of silence (in seconds) that the audio stream is not transmitted over the network		

Table 37: LAN Device

Parameter Name	Description	Range	Default
LAN Ethernet Interface Number of Entries	Number of instances of LAN Ethernet Interface Config in this LAN Device.		
LAN Ethernet Interface Config		The object models an Ethernet LAN connection on a CPE deviceand is implemented for CPEs with an Ethernet interface on the LAN side	
LAN Ethernet Interface Config.i			
MAC Address	The physical address of the interface		
Status	The status of the interface. The "Error" value can be used by the CPE to indicate a locally defined error condition.		
LAN Host Config Management	IP interface table.		
IP Interface			
IP Interface.i			
IP Interface IP address	IP address of the LAN interface of the CPE		
IP Interface Subnet Mask	Subnet mask of the LAN interface of the Internet Gateway Device.		

Table 37: LAN Device (Continued)

Parameter Name	Description	Range	Default
WLAN Configuration	This object models an 802.11 LAN connection on a CPE device and is implemented for CPEs with an 802.11 interface on the LAN side.		
Enable	Enables or disables this interface. When there are multiple WLAN Configuration instances, (e.g. each instance supports a different 802.11 standard or has a different security configuration) this parameter can be used to control which of the instances are currently enabled.	0 - Disable 1 - Enable	
BSSID	The MAC address of the interface.		
Channel	The current radio channel used by the connection. To request automatic channel selection, enable Auto Channel Enable. When Auto Channel Enable is enabled, the value of this parameter is the channel selected by the automatic channel selection procedure.	0 - 255	

Table 37: LAN Device (Continued)

Parameter Name	Description	Range	Default
Auto Channel Enable	Enables or disables automatic channel selection. If disabled the currently selected channel remains selected. If enabled, the channel is selected automatically and may be changed subsequently. When the channel is manually selected (i.e. when the Channel parameter is entered) this parameter must first be disabled.	0 - Disable 1 - Enable	
SSID	The current service set identifier in use by the connection. The SSID is an identifier that is attached to packets sent over the wireless LAN that functions as a “password” for joining a particular radio network (BSS). **Note**: If an access point wishes to be known by more than one SSID, it must provide a WLANConfiguration instance for each SSID.		

Table 37: LAN Device (Continued)

Parameter Name	Description	Range	Default
SSID Advertisement Enabled	When enabled, the CPE stops broadcasting the configured SSID in its beacon signal. The unit is configured by default as an “open system,” which broadcasts a beacon signal including the configured SSID. Wireless clients with a configured SSID of “ANY” can read the SSID from the beacon, and automatically set their SSID for immediate connection to the CPE. When enabled, the unit does not include its SSID in beacon messages. This provides a basic level of security, since wireless clients must be configured with the SSID to connect to the CPE.		
Standard	WiFi standard used	b/g,b,g-only	
Total Bytes Received	The total number of bytes received over the interface since the CPE was last reset.		
Total Bytes Sent	The total number of bytes sent over the interface since the CPE was last reset.		
Transmit Power	The current transmit power [dbm] of the CPE		
Transmit Power Supported	The power of the radio signals transmitted from the unit. The higher the transmission power, the farther the transmission range. Only Full power is available.		

Table 37: LAN Device (Continued)

Parameter Name	Description	Range	Default
WEP Encyrption Level	This parameter does not set encryption level but only indicates capabilities. If you need to setup related parameters, you should set the parameters (InternetGatewayDevice.LANDevice.{i}.WLANConfiguration.{i}.WEPKey.{i}.WEPKey) Yes, they stand for KeyType (64 or 128bits). A WEP key expressed as a hexadecimal string.10 characters for 40-bit encryption(64 bits HEX), or 26 characters for 104-bit encryption(128 bits HEX).		
WEP Key Index	Each WEP key has an index number (1-4). The selected key is used for authentication and encryption on the Wi-Fi interface	1 - 4	

Table 37: LAN Device (Continued)

Parameter Name	Description	Range	Default
CTS Protect Mode	When 802.11g and 802.11b clients operate together in the same Wi-Fi network, there needs to be a mechanism that prevents 802.11b clients interfering with 802.11g transmissions. This is achieved by sending 802.11b-compatible CTS (Clear to Send) or RTS/CTS (Request to Send / Clear to Send) frames before each transmission. This mechanism decreases the performance of 802.11g clients, but ensures that 802.11b clients can communicate with the CPE.	0 - 2 0 - **Auto** - Both RTS and CTS frames must be exchanged before a client can send data. There may be 802.11b clients in some networks that do not detect the CTS frames from other stations. The full RTS/CTS exchange should solve most connection problems, but it also has the greatest impact on network performance. 1 - **Always on** - The transmitting client sends a CTS frame to prevent others from accessing the medium. This mechanism is effective for most networks with mixed 802.11g and 802.11b clients. 2 - **Always off** - If there are no 802.11b clients in the network, the protection mode can be disabled.	Auto
MAC Address Control	Enable or disable MAC address control	0- Disable 1 - Enable	

Table 37: LAN Device (Continued)

Parameter Name	Description	Range	Default
Preamble Length	All IEEE 802.11 frames begin with an alternating pattern of 1s and 0s called the preamble, which tells receiving stations that a frame is arriving. This provides time for the receiving station to synchronize to the incoming data stream. This parameter sets the length of the signal preamble that is used at the start of a data transmission. Using a short preamble (96 microseconds) instead of a long preamble (192 microseconds) can increase data throughput on the unit, but requires that all clients can support a short preamble.	0 - 1 0 - Short Preamble 1 - Long Preamble	Short
RADIUS Key	RADIUS shared secret	0-65535	
RADIUS Port	RADIUS server port		
RADIUS Server	RADIUS server IP address		

Table 37: LAN Device (Continued)

Parameter Name	Description	Range	Default
RTS Threshold	Sets the packet size threshold at which a Request to Send (RTS) signal must be sent to a receiving station prior to the sending the data frame. The unit sends RTS frames to a receiving station to negotiate the sending of a data frame. After receiving an RTS frame, the station sends a CTS (clear to send) frame to notify the unit that it can start sending data. If a packet size equals or exceeds the RTS threshold, the RTS/CTS (Request to Send / Clear to Send) mechanism will be enabled. Units contending for the medium may not be aware of each other, and the RTS/CTS mechanism can solve this “Hidden Node Problem.”	256-2432 bytes	2432 bytes
Rekey Interval	Interval in seconds between renewals of authentication key		3600

Table 37: LAN Device (Continued)

Parameter Name	Description	Range	Default
Security Types	Sets the authentication type and encryption used	OpenSystem,NONE OpenSystem,WEP 802.1x,WEP SharedKey,WEP WPA,TKIP WPA,AES WPA,TKIPAES WPA2,TKIP WPA2,AES WPA2,TKIPAES WPA-WPA2-Mixed,TKIP WPA-WPA2-Mixed,AES WPA-WPA2-Mixed,TKIPAES WPA-PSK,TKIP WPA-PSK,AES WPA-PSK,TKIPAES WPA2-PSK,TKIP WPA2-PSK,AES WPA2-PSK,TKIPAES WPA-WPA2-Mixed-PSK,TKIP WPA-WPA2-Mixed-PSK,AES WPA-WPA2-Mixed-PSK,TKIPAES"	
PreShared Key			
PreShared Key.i			

Table 37: LAN Device (Continued)

Parameter Name	Description	Range	Default
Key Pass Phrase	Set WPA preshared key	ASCII string with between 8 and 63 characters	
PreShared Key	Set WPA preshared key	HEX string with values of 64 hex codes	
WEP Key			
WEP Key.i			
WEP Key	WEP key used to encrypt the data stream	A sequence of hexadecimal digits,10 characters for 40-bit encryption(64 bits HEX), or 26 characters for 104-bit encryption(128 bits HEX).	

Table 38: Time

Parameter Name	Description	Range	Default
Time	Parameters relating to an NTP or SNTP time client in the CPE.		
NTP Server 1	First NTP timeserver. Either a host name or IP address.		
NTP Server 2	Second NTP timeserver. Either a host name or IP address.		
NTP Server 3	Third NTP timeserver. Either a host name or IP address.		
NTP Server 4	Fourth NTP timeserver. Either a host name or IP address.		
NTP Server 5	Fifth NTP timeserver. Either a host name or IP address.		

Table 38: Time (Continued)

Parameter Name	Description	Range	Default
CPE Time Zone Name	The local time offset from UTC and name of the local time zone in the form: (GMT+hh:mm) LocalTimeZoneName		
Daylight Savings Used	Indicates whether or not daylight savings time is in use in the CPE's local time zone	0 - no daylight saving 1 - daylight saving	

Table 39: WAN Device

Parameter Name	Description	Range	Default
WAN Device			
WAN Device.i			
WAN Connection Device			
WAN Connection Device.i			
WAN IP Connection	Enables configuration of IP connections on the WAN interface of a CPE		
WAN IP Connection.i			
Addressing Type	The parameter is used to assign an address to the WAN side interface of the CPE for this connection.	DHCP Static	
External IP Address	This is the external IP address used by NAT for this connection. This parameter is configurable only if the AddressingType is Static.		
Subnet Mask	Subnet mask of the WAN interface. This parameter is configurable only if the AddressingType is Static.		

Table 39: WAN Device

Parameter Name	Description	Range	Default
Default Gateway	The IP address of the default gateway for this connection. This parameter is configurable only if the AddressingType is Static.		
DNS Servers List	Comma separated list of DNS server IP addresses for this connection. Support for more than three DNS Servers is OPTIONAL.		
MAC Address	The physical address of the WAN IP Connection if applicable. Configurable only if MAC Address Override is present and enabled.		
Max MTU Size	The maximum size of an Ethernet frame allowed from LANdevices		
Port Mapping Number of Entries	Total number of Port Mapping entries		
WiMAX Link Config	Models the WiMAX link layer properties specific to a single physical connection used for Internet access on a CPE. This object is intended for a CPE with a WiMAX WAN interface, and is exclusive of any other WAN*Link Config object within a given WANConnection Device instance.		
Enable	Enables or disables the supplicant's support for EAP-TTLS.		
WAN Common Interface Config		Models WAN interface properties common across all connection instances	

Table 39: WAN Device

Parameter Name	Description	Range	Default
WAN Access Type	Specifies the WAN access (modem) type. For logical WANDevice instances, e.g. DSL bonding groups, this must be set to a value that identifies the layer-1+ aggregation protocol, e.g. "BondedDSL".	DSL Ethernet POTS MoCA BondedDSL WiMAX	
WiMAX Interface Config	Defines the information necessary to advertise the capabilities of the device with respect to the layer 3 protocols supported		
Layer3 Capability			
CM IPv4 Support	This parameter defines whether the interface supports CMIPv4 PDUs.		
CM IPv6 Support	This parameter defines whether the interface supports CMIPv6 PDUs.		
IPv4 Support	This parameter defines whether the interface supports IPv4 PDUs.		
IPv6 Support	This parameter defines whether the interface supports IPv6 PDUs.		
Radio Module	Defines the information necessary to identify the radio module associated with the interface.		
Firmware Version	The firmware version of the radio module used by the CPE		
Hardware Version	The hardware version of the radio module used by the CPE		
Manufacturer	The manufacturer of the radio module used by the CPE		
Model	Describes the radio module in use by the CPE. May have one of the values in the range	WiMAX	

Table 39: WAN Device

Parameter Name	Description	Range	Default
Serial Number	The serial number of the radio module used by the CPE		
Software Version	The software version of the radio module used by the CPE. If the software version is not applicable then an empty string is returned.		

Table 40: Operator Profile

Parameter Name	Description	Range	Default
Operator Profile	Defines information related to the domain of network operators that can be selected for use by this device.		
Operator Profile.i			
Account Name	Defines the account name. The name of the operator must be unique within the context of the device.		
Root CA	Defines a Root CA entry trusted by this operator and is used by the device to authenticate the operator's network.		
Root CA.i			
Serial Number	Defines the serial number of associated certificate per RFC 3280 §4.1.2.2 & §3.3 defined by the Certificate Identifier parameter. If the Certificate Identifier parameter is empty, then this parameter returns an empty string		
Thumbprint	Defines the thumbprint of the certificate.		

Table 40: Operator Profile (Continued)

Parameter Name	Description	Range	Default
Subscription Parameters	Defines the primary and additional user subscriptions. Each subtype (primary, other) of a Subscription Paramaters instance is associated with one instance of a WAN Connection Device. Subscription Parameters instances to WAN Connection Devices associations are unique as only one EAP profile is permitted per WAN Connection Device. If multiple subscriptions are necessary, then additional WANConnection Devices would be provisioned.		
EAP Profile Number of Entries	Defines the number of provisioned EAP profile instances.		
Other Subscriptions Number of Entries	Defines the number of provisioned additional subscriptions that are not considered the primary subscription.		
EAP Profile **EAP Profile.i**	Defines the instances of subscription authtenication credentials used for the subscriber		
Certificate Number of Entries	Defines the number of certificates instances associated with this profile.		

Table 40: Operator Profile (Continued)

Parameter Name	Description	Range	Default
Encapsulation Protocol	Defines whether the payload secured by this profile is to be transported within a secure tunnel defined by another profile instance. This parameter specifies encapsulating type of the associated profile. For example, if the value is "EAP-TTLS" then these settings are intended for EAP-TTLS encapsulation. If the value is "None" then the profile is secured without a tunnel. **Note:** There cannot be two profile instances with the same encapsulating tunnel.	EAP-TTLS None	
Identity	Defines the identity used within the selected protocol. If not specified, the type itself decides what it sends as the username. For example: EAP-TLS might take the username from the user's certificate. If necessary it can also be requested from the user during authentication	String of up to 253 characters	
Mututal Authentication Enable	Defines whether the device presents client certificates as part of the authentication process.	0 - Disable 1- Enable	

Table 40: Operator Profile (Continued)

Parameter Name	Description	Range	Default
Pseudonym Identity	Defines the pseudonym identity to be used when EAP-AKA is used for the user authentication for first network entry. When this parameter is not empty the pseudonym identity must be used and the permanent identity must not be sent to the network during authentication.		
Realm	Defines the override realm that is sent in the EAP identity response packet. The identity response is:USERNAME@REALM		
Shared Secret	Defines the password used within the selected protocol and is the Shared Secret that is used in EAP Authentication. When returned the Shared Secret returns an empty string.	String of up to 253 characters	
Type	Defines the type of authentication protocol and credentials.	EAP-TLS EAP-TTLS EAP-AKA PLAIN-MSCHAPV2 Not Authenticated	
WiMAX Network Parameters		Defines the WiMAX network attributes associated with this instance of the operator. This object only exists if the device has a WiMAX interface.	
Channel Plan Number of Entries	Defines the number of channel plans associated with this operator.		0

Table 40: Operator Profile (Continued)

Parameter Name	Description	Range	Default
Contact Number of Entries	Defines the number of contact instances provisioned that may be used for contacting the operator.		
Home Network Service Provider Number of Entries	Defines the number of home network service providers for this operator.		
Channel Plan **Channel Plan.i**	Defines the instance of a channel plan. A Channel Plan is used in a network search. Channel Plans instances can be multiple NAPs, listed in CAPL instances. Channel Plans can also be used by NAPs that are not defined in the CAPL. The following alternatives exist for applying channel plans: a) no channel plans are defined b) only the Root Channel Plan is defined; c) Root Channel Plan including NAP Based Channel Plan is defined. The device will support Root Channel Plan. The device may support NAP Based Channel Plan as an optimization for NAP discovery and selection. The device is allowed to select the highest priority NAP of the found NAPs, as dictated by CAPL node, after Root Channel Plan based search has been ex		
Bandwidth	Defines the individual bandwidth value for this channel plan. The value is in kHz. A value of -1 indicates that this parameter has not been provisioned		

Table 40: Operator Profile (Continued)

Parameter Name	Description	Range	Default
Channel Plan Identifier	Defines the identifier assigned to the channel plan instance. Channel Plan Identifier values must be unique within the context of the Operator profile. The Channel Plan Identifier may be used to associate a Channel Plan instance contained within a CAP instance. If the Channel Plan Identifer is associated with a CAP instance, then the parameter InternetGatewayDevice.X_WIMAXFORUM_OperatorProfile.{i}.WiMAXNetworkParameters.CAPL.CAP.{i}.ChannelPlans maintains the list of associated Channel Plan Identifiers.		
First Frequency	Defines the first center frequency, in kHz, that is defined for this channel range		
Last Frequency	Defines the last central frequency, in kHz, that was defined for this channel range. If the value equals that of the First Frequency or it is 0, this channel plan instance refers to single channel rather than to a channel range.		

Table 40: Operator Profile (Continued)

Parameter Name	Description	Range	Default
Next Frequency Steps	Defines the frequency steps in kHz to reach the next central frequency when a channel range has been defined using the First Frequency and Last Frequency parameters. If the value of this parameter is 0, then this channel plan instance refers to single channel rather than to a channel range. The formula to calculate the next central frequency is: CurrentFreq = FirstFrequency While (CurrentFreq <= LastFrequency) CurrentFreq = CurrentFreq + NextFrequencyStep		
Home Network Service Provider **Home Network Service Provider.i**		Defines an instance of a home network service provider. One or more home network service providers can be provisioned, however only one instance is selected for each WANDevice. All instances of the HomeNetworkService Provider are mapped in one Network Service Provider Realm. Since the Network Service Provider is selected via the realm in the Network Access Identifier (NAI), only 1 realm is included in the subscription instances.	
Provider Identifier	Defines the Home Network Service Provider Identifier. (H-NSP-ID).	Valid values are: 0-((2**24) – 1) as the identifier is a 24 bit identifier.	

Table 40: Operator Profile (Continued)

Parameter Name	Description	Range	Default
CAPL	Defines the processing for the selection of network access providers provisioned within the operator's Contractual Agreements Preference List. The CAPL list determines which NAP will be selected to establish connection to the home network.		
CAP Number of Entries	Defines the number of provisioned network access providers in the CAPL list		
CAP Entry **CAP Entry.i**	Defines an instance of a network access provider provisioned within the operator's Contractual Agreements Preference List.		
Channel Plans	Defines a comma separated list of channel plan instance numbers (not identifiers) of type InternetGateway-Device. OperatorProfile.{i}.WiMAX NetworkParameters.Chan nelPlan.{i		
Network Selection Priority	Defines the priority of the NAP.	-1 - 255 -1 - Omitted 0 - Reserved. 1 - Highest priority 2-249 - Other priorities 250 - Lowest priority 251-254 - Reserved 255 - Forbidden	
Provider Identifier	Defines the network access provider's identifier (NAP-ID).	Valid values are: 0-((2**24) – 1) as the identifier is a 24 bit identifier.	

Table 41: System Configuration

Parameter Name	Description	Range	Default
MTU	The WAN maximum transmission unit (MTU) size in bytes	576-1500	1400
Management Mode	The forwarding mode for sending management packets to the WiMAX network	0 - Router mode: packets are forwarded based on Layer 3 IP addresses. 1 - Bridge mode: packets are forwarded based on Layer 2 MAC addresses.	1
Operation Mode	The mode for forwarding data packets from the service provider's WiMAX network to the local network.	0 - Router mode 1 - VPN mode 2 - Bridge ETHCS mode 3 - PPPoE mode 4 - Bridge IPCS mode	0
VoIP Mode	The forwarding mode for sending VoIP packets to the WiMAX network.	0 - Router mode: packets are forwarded based on Layer 3 IP addresses. 1 - Bridge mode: packets are forwarded based on Layer 2 MAC addresses. 2 - NONE: no forwarding	2
Service Line (Bridge IP CS/Eth CS/IP CS)			
Default Rule Enable	When enabled, if none of the configured rules can be applied to the traffic, the default rule is applied. When disabled, if none of the rules matches the traffic, then the packets are discarded	0 - Disable 1 - Enable	
Port	The port for IP CS/Eth CS	0 - all 1 - eth 2 - WiFi	
DSCP Marking	Service line packet tagging for classification	0 - Disable 1 - Enable	

Table 41: System Configuration

Parameter Name	Description	Range	Default
DSCP Start/Stop	The range of DSCP markings	0 - 63 (excluding reserved DSCP)	
Incoming Multicast Duplication Flag	Enables/disables the duplication of multicast (VoIP, Data) packets	0 - Disable 1 - Enable	
VLAN ID	The allowed VLAN ID on LAN. 4096 means “untagged”	0 - 4096	
VLAN Priority	The allowed VLAN priority on LAN. 8 means “untagged”	0 - 8	
IP Configuration			
Connection Mode	Sets the connection type for the unit	DHCP: The system will assign IP addresses to the units on the local area network Static: The IP address is predefined and fixed.	DHCP
IP Address (when the connection mode is set to Static)	The WAN IP address		
Netmask (when the connection mode is set to Static)	The subnet mask		
Gateway (when the connection mode is set to Static)	The gateway address		
DNS1 (when the connection mode is set to Static)	The domain name		
DNS2 (when the connection mode is set to Static)	The domain name		
VPN	VPN mode configuration parameters		
DH Group	Diffie-Hellman group	modp786 modp1024	

Table 41: System Configuration

Parameter Name	Description	Range	Default
IP Sec Enable	Enables/disables the Internet Protocol Security	0 - Disable 1 - Enable	
Main Mode Auth	The hash algorithm used for the main mode phase	sha1 md5	
Main Mode Ciph	The main mode cipher	des 3des aes	
Password	The password for the VPN session		
PreShared Key	The preshared key used during main mode phase	ASCII string of up to 32 characters	
Quick Mode Auth	Hash algorithm used for quick mode phase	None hmac_sha1 hmac_md5 hmac_sha1,hmac_md5	
Quick Mode Ciph	The quick mode cipher	des 3des aes	
Server	The server IP address		
User Name	The user name for the VPN session		
VPN Mode	The security protocols for the Virtual Private Network traffic sessions	0 - PPTP 1 - L2TP	
PPPoE	PPPoE mode configuration parameters		
User Name	The PPPoE username used for authentication with the PPPoE server		
Password	The PPPoE password used for authentication with the PPPoE server		

Table 42: User Interface

Parameter Name	Description	Range	Default
Available Languages	Comma-separated list of user-interface languages that are available.		
Current Language	Current user-interface language.		
ISP Home Page	The URL of the ISP's home page.		
ISP Name	The name of the customer's ISP. **Note**: This parameter is mandatory.		
Password Required	Present only if the CPE provides a password-protected LAN-side user interface. Indicates whether or not the local user interface requires a password to be chosen by the user. If false, the choice of whether or not a password is used is left to the user.	0 - False 1 - True	
Operator Password	Web login password		
WAN Login	Enable or disable Web login through WAN port	0 - Disable 1 - Enable	
WAN Login Port	Web login port number for WAN		
WAN Ping Enable	Enable or disable ping through the WAN port	0 - Disable 1 - Enable	
Web Login Password	Web login password		

Table 43: Communication Inc WiMAX

Parameter Name	Description	Range	Default
Communication Inc WiMAX		Redline WiMAX device metrics	
Serving BS ID	The Base Station Identifier of the serving base station at the time of reporting.		
Statistics	WiMAX device metrics statistics		
Bandwidth		Depending on unit model: 5000, 7000, or 10000	
Center Frequency	The middle frequency of the bandwidth of a channel.		
Connection Type	Time (in seconds) during which the unit is connected to the BS		
Downlink Data Rate	The total cumulative size in bytes of SDUs received from the service access point of the packet common part sublayer divided by the number of seconds in the collection period.		
Downlink Mean CINR	The mean downlink CINR at the end of the statistic interval. Implementation-specific physical CINR measurements performed against the preamble must be used to maintain a mean using the method outlined in WiMAX Rel 1.0 Mobility Profile.		
Downlink Mean RSSI	Implementation-specific downlink RSSI measurements performed against the preamble must be used to maintain a mean using the method outlined in WiMAX Rel 1.0 Mobility Profile.		

Table 43: Communication Inc WiMAX (Continued)

Parameter Name	Description	Range	Default
Number Bytes Received	Total number of bytes received over the interface since the CPE was last reset		
Number Bytes Transmitted	Total number of bytes transmitted over the interface since the CPE was last reset		
Number Packets Received	Total number of packets received over the interface since the CPE was last reset		
Number Packets Received with Error	Total number of packets received with errors over the interface since the CPE was last reset		
Number Packets Transmitted	Total number of packets transmitted over the interface since the CPE was last reset		
Overheat	Indication of temperature higher than 40°		
PHY DL mcs	Maximum downlink modulation reached		
PHY UL mcs	Maximum uplink modulation reached		

Table 43: Communication Inc WiMAX (Continued)

Parameter Name	Description	Range	Default
Scan Type	The method by which the network is scanned	■ Fullband - The system will try to scan the whole frequency band. ■ CAPL - Channel Allocation Priority Level. The system allocates priority to channels for scanning order. ■ Neighbor - The system will try to scan the neighbor BS to the previous BS defined in ¡§Last good BS¡¨. The neighbor BS details will appear in the table of this section. ■ History - The system will try to scan with the previous good BS to speed up the scan duration. A “good BS” is defined as one with which the unit can get an IP address.	
Security	Network security technologies and protocols status	Authorized - has authentication settings Unauthorized - without authentication setting	
Temperature	Unit’s temperature		
Tx Mean Power	The total uplink transmission power of the User Device across all active subcarriers during the most recent frame in which it transmitted uplink burst(s) at the end of the statistic interval.		

Table 43: Communication Inc WiMAX (Continued)

Parameter Name	Description	Range	Default
Uplink Data Rate	The total cumulative size in bytes of SDUs presented to the service access point of the packet common part sublayer divided by the number of seconds in the collection period.		
WMX Config			
CAPL Scan			
CAPL Scan Enable	Enable or disable CAPL Scan ability The CAPL scan list is defined by the customer provisioned list.	0 - Disable 1 - Enable	
Common Setting			
Handover Enable	Enable or disable HandOver ability of the CPE.	0 - Disable 1 - Enable	
Idle Mode Enable	Enable or disable Idle Mode ability of the CPE	0 - Disable 1 - Enable	
NAP Filter Enable	Enable or disable NAP Filter ability of the CPE	0 - Disable 1 - Enable	
Reconnect Active			
Supplicant Anonymous ID Enable	Enable or disable Supplicant Anonymous ID	0 - Disable 1 - Enable	
Supplicant Random ID Enable	Enable or disable Supplicant Random ID	0 - Disable 1 - Enable	
Fullband Scan			

Table 43: Communication Inc WiMAX (Continued)

Parameter Name	Description	Range	Default
Fullband Scan Class	Configures the frequency band and bandwidth as follows: 2.5G,BW=10M,5M 2.5G,BW=10M 2.5G,BW=5M 2.5G,BW=5M,10M 3.5G,BW=10M 3.5G,BW=5M,10M		
Fullband Scan Enable	Enable or disable Fullband scan Fullband scan tries to scan the whole frequency band (125kHz for the frequency step) with user specified bandwidth as follows: ■ 2.xGHz: 5M or 10MHz or both 10 and 5 MHz ■ 3.xGHz: 5M or 7 or 10MHz or only 10 and 5 or 10 and 7or 5 and 7 or all (10, 5, 7) MHz	0 - Disable 1 - Enable	
Last Good BSs Scan			
Hold on Last Good BS Enable	Enable or disable hold on last good BS. The BS is considered to be good if the CPE can get an IP address with this BS.	0 - Disable 1 - Enable	
Hold on Timeout			5 minutes

Table 43: Communication Inc WiMAX (Continued)

Parameter Name	Description	Range	Default
Last Good BSs Scan Enable	Enable or disable last good BSs Scan. The last good scan tries to scan with the previous good BS from the good pool to speed up the scan duration. The BS is considered to be good if the CPE can get an IP address with this BS.	0 - Disable 1 - Enable	
Neighbour BSs Scan			
Neighbor BSs Scan Enable	Enable or disable neighbor BSs Scan. The neighbor scan tries to scan the neighboring BS of the previous BS.	0 - Disable 1 - Enable	

14.4.3 Inform Parameters

Table 44: Inform Parameters

Parameter	Value
Manufacturer	InternetGatewayDevice.DeviceInfo.Manufacturer
Manufacturer OUI	InternetGatewayDevice.DeviceInfo.ManufacturerOUI
Model Name	InternetGatewayDevice.DeviceInfo.ProductClass
Serial Number	InternetGatewayDevice.DeviceInfo.SerialNumber
HW Version	InternetGatewayDevice.DeviceInfo.HardwareVersion
Software Version	InternetGatewayDevice.DeviceInfo.SoftwareVersion
Spec Version	InternetGatewayDevice.DeviceInfo.SpecVersion
Provisioning Code	InternetGatewayDevice.DeviceInfo.ProvisioningCode
Parameter Key	InternetGatewayDevice.ManagementServer.ParameterKey
Con Req URL	InternetGatewayDevice.ManagementServer.ConnectionRequestURL
IP Address	InternetGatewayDevice.WANDevice.1.WANConnectionDevice.1.WANIPConnection.1.ExternalIPAddress

14.5 BreezeMAX 5000 CPE

The following are the parameters and file transfer configurations for Alvarion's WiMAX 802.16e 5000 PRO CPEs based on the Sequans chip.

14.5.1 File Transfer Configurations

- Firmware Download
  The required parameters for firmware download are:
  URL in the format ip_addr, for example: 192.168.10.21
  Target Location that is the file_name, for example: K2_4_6_5_54.bz
  File Size in bytes, for example: 4520625

- Configuration File Download
  The required parameters for firmware download are:
  URL in the format ip_addr, for example: 192.168.10.21
  Target Location that is the file_name, for example: configuration.xml
  File Size in bytes, for example: 5000

- Configuration File Upload
  The required parameter for firmware download is:
  URL in the format ip_addr, for example: 192.168.10.21

When operating with File Management, the File Servers: Download server details and CPE upload server details must be configured with an ip_addr, for example 192.168.10.21.

Sequans CPEs do not require the name of the protocol in the URL but the supported protocol is tftp.

14.5.2 List of Parameters

Table 45: Device Info

Parameter Name	Description	Type	Range	Default
Operator Profile Number Of Entries	The number of entries in the Operator Profile table	unsignedInt		
Description	A full description of the CPE device	String of up to 256 characters	Alvarion WiMax <ModelName> <ProductVariant>	
Hardware Version	Hardware version number	String of up to 64 characters		
Manufacturer	The manufacturer of the CPE	String of up to 64 characters		Alvarion
Manufacturer OUI	Organizationally unique identifier of the device manufacturer. Represented as a six hexadecimal-digit value using all upper-case letters and including any leading zeros. The value MUST be a valid OUI	String of up to 64 characters		0020D6
Info Model Name	A string identifying the particular CPE model and version	String of up to 64 characters	CPE PRO SQ, CPE PRO SQ-L, CPE Si SQ, CPE Si SQ-L	
License Type	Displays the license type according to the available Bandwidth			
Product Class	Product Class of the CPE	String of up to 64 characters		Sequans
Serial Number	Serial number of the CPE	String of up to 64 characters		
Software Version	Firmware version number	String of up to 64 characters		

Table 45: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Up Time	Time in seconds since the CPE was last restarted	unsignedInt	>0	0
Product Variant	Radio Type. A string identifying the particular CPE model and version	String of up to 64 characters	[2X|3X|5X]	
Smart Card	SIM card status	unsignedInt	0 - Installed 1 - Not Installed 2 - Failed	
Vendor Config File				
Configuration File Date	Date and time when the content of the current version of this vendor configuration file was first applied by the CPE	DateTime	YYYY-MM-DDTHH:MM:SS	0001-01-01T00:00:00
Configuration File Description	A description of the vendor configuration file from XML file	String of up to 256 characters.		
Configuration File Name	Name of the vendor configuration file according to the name of the downloaded file	String of up to 64 characters.		family.xml
Configuration File Version	A string identifying the configuration file version currently used in the CPE	String of up to 16 characters.		1
Config File MD5 Signature	MD5 signature of the file	String of up to 16 characters.		No File Yet
Main SW File				
Main SW File Name	Name of the main software file	String of up to 64 characters.	K2_x_y_z_t.app	
Version of Main SW	A string identifying the main software file version currently used in the CPE	String of up to 16 characters.	x.y.z.t	

Table 45: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Main SW File Date	Date and time when the content of the current version of this main software file file was first applied by the CPE	DateTime		
Shadow SW File				
Shadow SW File Date	Date and time when the content of the current version of this shadow software file was first applied by the CPE	DateTime		
Shadow SW File Name	Name of the shadow software file.	String of up to 64 characters.	K2_x_y_z_w.app	
Vendor Config File Number of Entries	Defines the number of vendor configuration file entries	unsignedInt	0 - 1	1
Version of Shadow SW	A string identifying the shadow software file version currently used in the CPE	String of up to 16 characters.	x.y.z.w	
File Transfer Mode		String of up to 16 characters.	0 - Single file transfer at a time 1 - Single file transfer per direction at a time 2 - Multuiple files transfer simultaneously	1 - Single file transfer per direction at a time
File Transfer Protocol		String of up to 16 characters.	1 - TFTP 2 - FTP 3 - HTTP	1 - TFTP
Running SW	Current software running	Boolean	0 - Main 1 - Shadow	0

Table 46: WiMAX Device Info

Parameter Name	Description	Type	Range	Default
Terminal Equipment				
Manufacturer	The manufacturer of the CPE	String of up to 50 characters		Alvarion
Model	A string identifying the particular CPE model and version	String of up to 50 characters	CPE PRO SQ, CPE PRO SQ-L, CPE Si SQ, CPE Si SQ-L	
Hardware Version	Hardware version number	String of up to 50 characters		
Device Identifier	The device identifier of the Terminal Equipment. The value of this parameter MUST be unique and formatted as a URN as defined in [RFC2141]. The value MUST be the concatenation of: 1.) Manufacturer 2.) Equipment model number - in this case the concatenation of: - DeviceInfo.ProductClass - One Space character (" ") - DeviceInfo.ModelName 3.) Serial number The elements are separated by a ":". For example: "urn: Alvarion:Rosedale2 CPE PRO2:12345678" Related to the device identifier defined within the TR-069 protocol (the DeviceID argument of the Inform message).	String of up to 50 characters	See the Range definitions of the following parameters: - Manufacturer - ProductClass - ModelName - SerialNumber	Factory

Table 46: WiMAX Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Device Type	Defines the type of device. Enumeration of: Laptop, PMP, MultiModePMP, UMPC, InternetTablet, GamingDev, Digital Camera, Digital Camcorder, MultiModeMsgDev, EBook, NavigationDev, InVehicleEntDev, CPE.	String of up to 50 characters	CPE	CPE
Firmware Version	The firmware version of the terminal equipment. FirmwareVersion is a string of dot-delimited integers. FirmwareVersion holds the version number of the currently running version (i.e. Active SW Version).	String of up to 50 characters		
OS Name	the name of the operating system running on the CPE.			

Table 47: Management Server

Parameter Name	Description	Type	Range	Default
NMS Username	The user name used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol (used only for HTTP-based authentication).	String of up to 256 characters.		tr069
NMS Password	The Password used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol (used only for HTTP-based authentication).	String of up to 256 characters.		tr069

Table 47: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Connection Request URL	The CPE defines a URL with the format of the Default URL . The "host" portion may be the IP address of the NMS interface of the CPE or a host name.	String of up to 256 characters.	http://host:port/RemoteCPEManager	
Connection Request Username	Username used to authenticate an NMS making a Connection Request to the CPE.	String of up to 256 characters.		dps
Connection Request Password	Password used to authenticate an NMS making a Connection Request to the CPE. When read returns an empty string regardless of actual value.	String of up to 256 characters.		dps

Table 47: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Parameter Key	ParameterKey provides the NMS with a reliable and extensible means to track changes made by the NMS. The value of ParameterKey MUST be equal to the value of the ParameterKey argument from the most recent successful reception of any of the following methods: - SetParameterValues - AddObject - DeleteObject The ParameterKey will be reset to zero when a Factory Reset is executed.			
DSCP	The actual DSCP value in to be used in the management connection	unsignedInt	0 - 63	6
Organization	The name of the organization to which the CPE belongs	String of up to 32 characters.		Not set yet
Address	The organization's address	String of up to 32 characters.		Not set yet
Country	The country where the organization is located	String of up to 32 characters.		Not set yet
Periodic Inform Enable	Enables to set whether or not the CPE maintains a keep alive mechanism.	Boolean	Yes/No	1=Yes (checkbox selected)

Table 47: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Periodic Inform Interval	The duration in seconds of the interval to wait before reaching a decision that the server is no loner available. Functional only if the Enable parameter is enabled (checked).	unsignedInt		86400
Periodic Inform Time	An absolute time reference in UTC to determine when the CPE first initiates the keep alive mechanism.	DateTime	YYYY-MM-DDTHH:MM:SS	0000-00-00T00:00:00
Default DSCP	Default DSCP value	unsignedInt	0 - 63	6
Actual DSCP	Actual DSCP value	unsignedInt	0 -63	6
URL	URL for the CPE to connect to the ACS using the CPE WAN Management Protocol. This parameter MUST be in the form of a valid HTTP. The “host” portion of this URL is used by the CPE for validating the certificate from the ACS when using certificate-based authentication.	String of up to 256 characters.	ASCII representation of the following text: http://aaa.bbb.ccc.ddd/nnn	
Upgrades Managed	Indicates whether the ACS will manage upgrades for the CPE. If true the CPE should only use ACS to search for available upgrades. If false the CPE may use other means for this purpose.	Boolean	0 - False 1 - True	0 - False

Table 48: Local Management

Parameter Name	Description	Type	Range	Default
Installer Password	Password for direct access to the CPE	String of up to 32 characters.		installer

Table 49: Services

Parameter Name	Description	Range	Default
Services			
Actual Service Mode	The operation mode describing the method of connection of the CPE	0 - IP CS 1 - L2 CS	0
Configured Service Mode	Configured operation mode describing the method of connection of the CPE	0 - IP CS 1 - L2 CS	
Ethernet CS			
Access VLAN	If VLAN Transparency is enabled on the BTS, the Access VLAN parameter represents the VLAN 1q value of the incoming downlink traffic. The VLAN tag 1q is removed in downlink and tagged again in uplink. A value of 4096 means transparent.	0 - 4096	
Ethernet CS Rules Number of Entries	Number of entries in the Service Rule list.		
PPPoE Enable	Enables the PPPoE processor when one or multiple PPPoE clients are configured behind the CPE.	0 - Disable 1 - Enable	

Table 49: Services (Continued)

Parameter Name	Description	Range	Default
Service Rule.i			
DSCP Start	In Uplink in case DSCP Start = DSCP Stop all the packets that match the DSCP tag will be tagged according to the service line VLAN ID and Priority. In Downlink the packets that are tagged with VLAN ID and Priority will be tagged according to the service line with the DSCP value in case DSCP Start= DSCP Stop and with the value within the interval DSCP Start - DSCP Stop	0 - 63 (64 means N/A)	0
DSCP Stop		0 - 63 (64 means N/A)	
Outgoing VLAN ID		0 - 4095 (4096 means transparent)	
Outgoing VLAN Priority		0 - 7 (8 means transparent)	
IP CS			
IP CS Rules Number of Entries	Defines the number of IP CS rules	Read: 1 - 8 Write: 2 - 8	8
Service Rule.i			
Active	Configures whether VLAN parameters are active or not	0 - Not active 1 - Active	0
Incoming VLAN ID	ID of incoming VLAN	0 - 4095	0
Incoming VLAN Priority	Priority of incoming VLAN	0 - 7	0
Incoming DSCP		0 - False 1 - True	0
Enable DSCP Remarking	Configures whether DSCP remarking is enabled.	0 - False 1 - True	0

Table 49: Services (Continued)

Parameter Name	Description	Range	Default
Outgoing DSCP - Start of Range	On UL, in case start=stop and marking is enabled, all packets that match the vlan defined for the rule will have their DSCP replaced with outDSCPstart/stop. On DL, In case start=stop and marking is enabled and learnedDSCP is initialized, the matched packet will have its DSCP restored. In case start != stop or marking is disabled or learnedDSCP is not initialized, the matched packet will not have its DSCP restored. In both cases, the matched packets will have Vlan added. This is a read only field is managed by "Add Object" and "Delete Object"	0 - 63	0

Table 49: Services (Continued)

Parameter Name	Description	Range	Default
Outgoing DSCP - End of Range	On UL, in case start=end and marking is enabled, all packets that match the vlan defined for the rule will have their DSCP replaced with outDSCPstart/stop. On DL, In case start=end and marking is enabled and InDSCP is initialized, the matched packet will have its DSCP restored. In case start != stop or marking is disabled or learned DSCP is not initialized, the matched packet will not have its DSCP restored. In both cases, the matched packets will have Vlan added. This is a read only field and is managed by "Add Object" and "Delete Object"	outDSCPstart - 63	0

Table 50: LAN Device

Parameter Name	Description	Range	Default
LAN Device			
Lan Device.i			
LAN Ethernet Interface Config.i			
Enable		0 - Disable 1 - Enable	0 - Disable
MACAddress	The MAC address of the LAN port.		
Status	The status of the LAN port.		

Table 50: LAN Device (Continued)

Parameter Name	Description	Range	Default
Configured Port Mode	Enables to configure the Ethernet port to auto-negotiation mode or to set the duplex and speed.	0 = 10 Mbps Half Duplex 1 = 10 Mbps Full Duplex 2 = 100 Mbps Half Duplex 3 = 100 Mbps Full Duplex 4 = Auto	4 - Auto
Actual Port Mode	Actual Ethernet port mode	10 Mbps Half Duplex, 10 Mbps Full Duplex, 100 Mbps Half Duplex, 100 Mbps Full Duplex	
LAN Disable when WAN is Down		0 - Disabled 1 - Enabled	
Short LAN Down when WAN is Up	Enable/Disables the Ethernet phy after wireless link is established (to cause the host to send DHCP discover)	0 - Disabled 1 - Enabled	1
Stats			
Stats.i			
Total Bytes Sent	Total number of bytes sent over the LAN port since the CPE was last reset		0
Total Bytes received	Total number of bytes received over the LAN port since the CPE was last reset		0
Total Packets Sent	Total number of packets sent over the LAN port since the CPE was last reset		0

Table 50: LAN Device (Continued)

Parameter Name	Description	Range	Default
Total Packets Received	Total number of packets received over the LAN port since the CPE was last reset		0
Receive Bit Rate	The received bit rate of the LAN port		0
Receive Packet Rate	The received packet rate of the LAN port		0
Transmit Bit Rate	The transmitted bit rate of the LAN port		0
Transmit Packet Rate	The transmitted packet rate of the LAN port		0
Hosts			
Number of hosts	Number of hosts		0
Host.i			
MAC Address	The physical address of the host		
LAN Host Config Management			
IP Interface Number of Entries	Defines the number of IP interface entries		1
IP Interface.i			
IP Address LAN Side	IP Address for local Web provisioning		192.168.254.251
Subnet Mask	Subnet mask for IP Address of local Web provisioning		255.255.255.0
IP Addressing Method	Select the type of IP addressing	Static Dynamic DHCP	Static

Table 51: WAN Device

Parameter Name	Description	Range	Default
WAN Device			
WAN Device.i			
ATPC			
ATPC Enable	Enable/Disable the ATPC algorithm	0 - Disable 1 - Enable	
Tx Power	Describes the transmission power level		
WAN Common Interface Config			
WAN Access Type	Type of WAN Access	WiMAX	WiMAX
Total Bytes Transmitted	Total number of bytes sent over the WAN port since the CPE was last reset		0
Total Bytes Received	Total number of bytes received over the WAN port since the CPE was last reset		0
Total Packets Transmitted	Total number of packets sent over the WAN port since the CPE was last reset		0
Total Packets Received	Total number of packets received over the WAN port since the CPE was last reset		0
Current Bit Received Rate	The received bit rate of the WAN port		0
Current Packet Received Rate	The received packet rate of the WAN port		0
Current Bit Transmitted Rate	The transmitted bit rate of the WAN port		0
Current Packet Transmitted	The transmitted packet rate of the WAN port		0
WAN Connection Device			
WAN Connection Device.i			

Table 51: WAN Device (Continued)

Parameter Name	Description	Range	Default
No. of IP connections	Defines the number of IP connections		
WAN IP Connection			
WAN IP Connection.i			
External IP Address			
MAC Address	The physical address of the host.		
WiMAX Interface Quality			
CINR	Carrier to Interference-plus-Noise Ratio expressed in decibels (dBs)		
CINR Reuse 1	Carrier to Interference-plus-Noise Ratio for schema Reuse 1		
CINR Reuse 3	Carrier to Interference-plus-Noise Ratio for schema Reuse 3		
CINR Std	Standard deviation of CINR		
CINR Std Reuse 1	Standard deviation of CINR for schema Reuse 1		
CINR Std Reuse 3	Standard deviation of CINR for schema Reuse 3		
Current FEC Code	Forward error correction code in use		
Last TX Power	The last detected transmission rate		
RSSI	The RSSI of the CPE		
RSSI Std	Standard deviation of RSSI		
Uplink FEC code	Uplink forward error correction code		

Table 51: WAN Device (Continued)

Parameter Name	Description	Range	Default
WiMAX Interface Status			
Authentication Method	Select the type of authentication method in use	0 - None 1 - EAP TLS 2 - EAP TTLS 3 - EAP AKA 4 - PLAIN-MSCHAPV2	2 - EAP TTLS
Transmit Power	The current transmit power [dbm] of the CPE		
Channel Frequency	The frequency (in kHz) that the CPE is tuned in on.		
Bandwidth	The bandwidth currently in use.	3.5 MHz 5 MHz 7 MHz 10 MHz Optional 20 MHz Auto	Auto
Selected Antenna	The current antenna selected.	1 - 6	
Downlink SNR	The SNR of the CPE	0 - 3500	
Maximum Downlink rate	The maximum DL rate in the last 100 frames interval (There is no sliding window)	QPSK_1_2 rep 6 QPSK_1_2 rep 4 QPSK_1_2 rep 2 QPSK_1_2 QPSK_3_4 16QAM_1_2 16QAM_3_4 64QAM_1_2 64QAM_2_3 64QAM_3_4 64QAM_5_6	

Table 51: WAN Device (Continued)

Parameter Name	Description	Range	Default
Maximum Uplink Rate	The maximum UL rate in the last 100 frames interval (There is no sliding window)	QPSK_1_2 rep 6 QPSK_1_2 rep 4 QPSK_1_2 rep 2 QPSK_1_2 QPSK_3_4 16QAM_1_2 16QAM_3_4 64QAM_1_2 64QAM_2_3 64QAM_5_6	
Distance to BS	The distance of the MS from the BS in meters. This value should be calculated based on the initial range response timing offset and should consider periodic offset correction		
WiMAX Interface Config			
Radio Module			
Radio Model	Select the type of radio model.	WiNetworks SMI 1.0 SMI DUAL SMI 0.7 new SMI 0.7 SMI 0.5 ADC	
Frequency Band Name	Name of the radio band that is used		
Frequency Band Start	The frequency at which to start scanning, in MHz	2305 to 5150	
Frequency Band End	The frequency at which to stop scanning, in MHz	2360 to 5350	

Table 51: WAN Device (Continued)

Parameter Name	Description	Range	Default
Radio Link Control			
Mobility Mode	Mobility type of the CPE	Fixed Mobile Nomadic	Fixed
Preferred BS Loss			
Min ReScan Timeout	Defines the time value that will make the MS re-scan for the preffered BS. This implies the case in which the MS is connected to a BS ID other than the preffered one. The value of MinReScan Timeout increases by the same value at every re-scan until it reaches the MaxReScan Timeout.		

Table 52: WiMAX Operator Profile

Parameter Name	Description	Range	Default
WiMAX Operator Profile.i			
Subscription Parameters			
EAP Profile Number of Entries	Defines the number of EAP profiles		
EAP Profile.i			
Type	Select the authentication method to be used	EAP-TLS EAP-TTLS EAP-AKA PLAIN-MSCHAPV2 Not Authenticated	EAP-TTLS
Identity	Defines the identity within the selected protocol	String of up to 253 characters	<Empty>

Table 52: WiMAX Operator Profile (Continued)

Parameter Name	Description	Range	Default
Shared Secret	Defines the password used within the selected protocol	String of up to 253 characters	
Realm	Defines the override realm that is sent in the EAP identity response packet. The identity response is:USERNAME@REALM	String of up to 256 characters	
Server Realm List	A list of comma separated allowed realms that the device MUST accept for the subjectAltNamesNSName file in the server certificate for the EAP peer	String of up to 251 characters	
Disable Frequency Scan (DFS)	Enables/Disables Frequency Scan	0 - Disable 1- Enable	0
Enable Server Realm List Verification		0 - Disable 1- Enable	
Primary			
Activated	Indicates the provisioning status of the primary subscriber.	0 - False 1 - True	0
Name	The name of the subscriber		
EAP Profiles	A comma separated list of EAP profile object instance numbers to be used for the client authentication of the associated connection device.	String of up to 256 characters	
WiMAX Network Parameters			
Channel Plan Number of Entries	Defines the number of channel plan entries	0 - 1	0
BS Scanning Results Number of Entries	Defines the number of BS scanning results entries	0 - 40	0

Table 52: WiMAX Operator Profile (Continued)

Parameter Name	Description	Range	Default
Discrete Frequencies Number of Entries	Defines the number of discrete frequencies entries	0 - 10	1
Channel Scanning Results.i			
BS ID	The BS ID of the base station currently serving the CPE		
SNR	The SNR of the CPE (in dB)		
Frequency	The frequency (in kHz) that the CPE is tuned in on		
Bandwidth	The bandwidth currently in use (in MHz)	5000 MHz 7000 MHz 10000 MHz	
RSSI	The RSSI of the CPE in dB		
Channel Plan.i			
Scanning Band - Low End	The bandwidth at which to start scanning, in kHz	125KHz resolution for 2.x and 3.x GHz and 2.5MHz resolution for 5.xGHz	Band start frequency
Scanning Band - High End	The bandwidth at which to end scanning, in kHz	125KHz resolution for 2.x and 3.x GHz and 2.5MHz resolution for 5.xGHz	Band stop frequency
Frequency Main Step	The main frequency step currently configured. (Applicable only for 2.xGHz and 3.xGHz)	Step of 125KHz resolution for 2.x and 3.xGHz, and 2.5Mhz for 5.xGHz	2.5MHz for BWs of n*5MHz, 1.75MHz for BWs n*3.5MHz.

Table 52: WiMAX Operator Profile (Continued)

Parameter Name	Description	Range	Default
Frequency Intermediate Step	The intermediate frequency steps currently configured	1 - First freq scan, 2- 125KHz, 3- 250KHz, 4- 375KHz, 5- 500KHz, 6 - 625KHz, 7 - 750KHz, 8 - 1250KHz for BW=2.5MHz*n / 875KHz for BW=1.75MHz*n	
Scan All Frequencies	Scanning of all band sizes is allowed.	0 - False 1 - True	1
Scan Bandwidth	The scanning frequency currently configured	0 1	
Auto Scan Mode	Enables or disables auto scan mode	0 - Disable 1 - Enable	
Discrete Frequencies.i			
Active	Used for devices that implement a static table of discrete frequencies for scanning. Set to 1 (true) when the service rule is added (AddObject). Set to 0 (false) when the service rule is deleted (DeleteObject).	0 - False 1 - True	
Frequency	A discrete frequency (in kHz)	A valid frequency	
BS Selection			
Allowed BS ID	The currently configured BSID that is allowed to communicate with the SU	0 =< Ni =< 255	0.0.0.0.0.0

Table 52: WiMAX Operator Profile (Continued)

Parameter Name	Description	Range	Default
Allowed BS ID Mask	The currently configured BS ID mask that is allowed to communicate with the SU	1 =< Ni =< 255	0.0.0.0.0.0
Preffered BS ID	The currently configured BS ID that together with the Preferred BS ID Mask define the initial search range for the best BS.	2 =< Ni =< 255	0.0.0.0.0.0
Preffered BS ID Mask	The currently configured BS ID Mask that together with the Preferred BS ID define the initial search range for the best BS.	3 =< Ni =< 255	0.0.0.0.0.0
Serving BS ID	The BS ID of the base station currently serving the CPE	3 =< Ni =< 255	0.0.0.0.0.0

14.5.3 Inform Parameters

Table 53: Inform Parameters

Parameter	Value
Manufacturer	InternetGatewayDevice.DeviceInfo.Manufacturer
Manufacturer OUI	InternetGatewayDevice.DeviceInfo.ManufacturerOUI
Model Name	InternetGatewayDevice.DeviceInfo.ProductClass
Serial Number	InternetGatewayDevice.DeviceInfo.SerialNumber
Software Version	InternetGatewayDevice.DeviceInfo.SoftwareVersion
Parameter Key	InternetGatewayDevice.ManagementServer.ParameterKey
Con Req URL	InternetGatewayDevice.ManagementServer.ConnectionRequestURL
Con Req Username	InternetGatewayDevice.ManagementServer.ConnectionRequestUsername
Con Req Password	InternetGatewayDevice.ManagementServer.ConnectionRequestPassword

14.6 NG_VG

The NG_VG is a device that connects physically behind the CPE at the customer location and facilitates voice communications. It is managed by StarACS in the same way as other devices that can be discovered and operated through the TR protocol. The Device Info page includes a parameter linking the NG_VG device and the associated CPE. The parameter is called **Associated CPE** in the Device Info page of the NG_VG and **Associated NG_VG** in the Device Info page of the CPE. The Associated NG_VG parameter is not a real parameter and is created by the ACS based on the parameter in the voice gateway in order to facilitate browsing between the two associated devices.

NOTE

At the present time, NG_VG devices only work with BreezeMAX 3000 CPEs.

14.6.1 File Transfer Configurations

- Firmware Download:
  The required parameter for firmware download is:
  URL: http://ip_addr/file_name

- Configuration File Download:
  The required parameter for firmware download is:
  URL: http://ip_addr/file_name

When operating with File Management, the File Servers: Download server details and CPE upload server details must be configured with http://ip_addr.

14.6.2 List of Parameters

Table 54: Device Info

Parameter Name	Description	Type	Range	Default
CFE Version	Boot Loader Version	String of up to 64 characters		
Hardware Version	Hardware version number	String of up to 64 characters		
Info Model Name	A string identifying the particular CPE model and version	String of up to 64 characters		Gateway

Table 54: Device Info (Continued)

Parameter Name	Description	Type	Range	Default
Manufacturer	The manufacturer of the CPE	String of up to 64 characters		Broadcom
Product Class	Product Class of the CPE	String of up to 64 characters		Gateway
Serial Number	Serial number of the CPE	String of up to 64 characters		001915bcb868
Software Version	The software version currently running	String of up to 64 characters	x.x.x.x	
Spec Version	Represents the version of the specification implemented by the device	String of up to 64 characters		
Up Time (seconds)	Time in seconds since the CPE was last restarted	unsignedInt	0 - 4294967295 Sec	

Table 55: Management Server

Parameter Name	Description	Type	Range	Default
ACS URL	The URL used by the CPE to connect to the NMS	String of up to 128 characters		
Bind Interface	The interface with which TR069 runs	String of up to 128 characters		
Client IP	The client IP to connect to the CPE get a MAC address and serial number.		0.0.0.0. - 255.255.255.255	192.168.254.61
Client SubMask	The client subnet mask to connect to the CPE get a MAC address and serial number.		0.0.0.0. - 255.255.255.255	255.255.255.0
Connection Request Password	Password used to authenticate an ACS making a Connection Request to the CPE.	String of up to 256 characters.		dps

Table 55: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Connection Request URL	HTTP URL for an ACS to make a Connection Request notification to the CPE,in the form: http://host:port/path The “host” portion of the URL MAY be the IP address for the management interface of the CPE in lieu of a host name.	String of up to 256 characters.		
Connection Request Username	Username used to authenticate an ACS making a Connection Request to the CPE.	String of up to 256 characters.		dps
CPE IP	The CPE IP to connect to get a MAC address and serial number.		0.0.0.0. - 255.255.255.255	192.168.254.252
CPE SubMask	The CPE subnet mask to connect to get a MAC address and serial number.		0.0.0.0. - 255.255.255.255	255.255.255.0
Inform Enable	Enables to set whether or not the CPE must send CPE information to the Server using the Inform method call.	Boolean	0 - Disable 1 - Enable	

Table 55: Management Server (Continued)

Parameter Name	Description	Type	Range	Default
Inform Interval (seconds)	The duration in seconds of the interval for which the CPE must attempt to connect with the ACS and call the Inform method. Functional only if the Inform Enable parameter is enabled (checked).	unsignedInt	0 - 65535	
NMS Password	The Password used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol. When read, this parameter returns an empty string, regardless of the actual value.	String of up to 256 characters		tr069
NMS Username	The Username used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol.	String of up to 256 characters		tr069

Table 56: Services

Parameter Name	Description	Range	Default
Services			
Voice Service	The top-level object for VoIP CPE.		
Voice Service.i			
Voice Profile Number of Entries	The number of instances Voice Profile entries		
Voice Profile	Object associated with a collection of voice lines with common characteristics. Support for adding and removing profiles is conditional on whether more than one profile is supported as indicated by InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i} By default, a single Voice Profile object is present in a Voice Service, initially in the disabled state		
Voice Profile.i			
DTMF Relay	The method by which DTMF digits should be passed	SIPInfo RFC2833 InBand	InBand
Hook Flash Relay	The hook flash method. A "hookflash" is a brief "on-hook" signal indicating that you have sent a "hookflash" instead of actually hanging up. The value "SIPInfo" is applicable only if the SignalingProtocol is SIP. This parameter is onlyapplicable for a VoIP endpoint.	SIPInfo None	None
Location	Voice standard based on location		USA
OnHook Regret Timeout	After hanging up the phone, the call does not terminate until the timeout is reached. This function only works with incoming calls	0 - 65535	20

Table 56: Services (Continued)

Parameter Name	Description	Range	Default
VoIP Dialplan	A dial plan establishes the expected number pattern of digits for a telephone number. This includes country codes, access codes, area codes and all combinations of digits dialed. For instance, the North American public switched telephone network (PSTN) uses a 10-digit dial plan that includes a 3-digit area code and a 7-digit telephone number. Most PBXs support varaible-length dial plans that use 3 to 11 digits. Dial plans must comply with the telphone networks to which they connect.		
Line	Object associated with a distinct voice line. Support for adding and removing lines is conditional on whether the CPE supports more than one line in total as indicated by InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i}.Line.{i} By default, on creation of a given Voice Profile, a single Line object is present, initially in the disabled state. Applicable only for a VoIP endpoint.		
Line.i			
Enable	Enables or disables the line, or places it into a quiescent state.	0 - Disable 1 - Enable	
Calling Features	Voice line parameters related to optional endpoint based calling features		
Call Forward Busy	Enables or disables call forwarding-on-busy by the endpoint. This parameter should not be present if the CPE does not support endpoint based call forwarding.	0 - Off 1 - On	0

Table 56: Services (Continued)

Parameter Name	Description	Range	Default
Call Forward No Answer	Enables or disables call forwarding-on-no-answer by the endpoint. This parameter should not be present if the CPE does not support endpoint based call forwarding.	0 - Off 1 - On	0
Call Forward Unconditionally	Enables or disables call forwarding by the endpoint. This parameter should not be present if the CPE does not support endpoint based call forwarding.	0 - Off 1 - On	0
Call Forwarding Number	Directory number to which all incoming calls to this line should be forwarded if Call Forward On Busy Enable is true and the line is busy.		
Call Waiting Enable	Enables or disables call waiting in the endpoint. This parameter should not be present if the CPE does not support endpoint managed call waiting.	0 - Off 1 - On	0
Caller Name	String used to identify the caller		
MWI	Enables or disables Message Waiting Indication	0 - Off 1 - On	0
Codec	Table describing the set of codecs enabled for use with this line. Each entry in this table refers to a distinct combination of codec and bit rate. When a Line is created, this object must be populated with the set of supported codecs matching the InternetGatewayDevice.Services.VoiceService.{i}.VoiceProfile.{i}.Line.{i}. Codec.List.{i} table. The ACS may restrict and/or prioritize the codec support for this profile using this object. Applicable only for a VoIP endpoint.		
List			
List.i			

Table 56: Services (Continued)

Parameter Name	Description	Range	Default
Preferred Codec	Preferred codec type	G711 Alaw G.729a G.723.1 G.726_24 G.726_32 BV16	
Preferred Time	The “Preferred ptime” is the time delay (milliseconds) between voice packets sent	10 20 30	20
Priority	Indicates the priority for the combination of codec parameters, where 1 is the highest priority. When the priority differs between entries in this table, the CPE will use the highest priority (the lowest number) entry among those supported by the remote endpoint and consistent with the available bandwidth. When the priorities for multiple entries are equal, the CPE can apply a local criterion for choosing between them.		
SIP	Voice line parameters that are specific to SIP call signaling		
Authentication Password	Password used to authenticate the connection to the server. When read, thisparameter returns an empty string, regardless of the actual value.		

Table 56: Services (Continued)

Parameter Name	Description	Range	Default
Authentication Username	Username used to authenticate the connection to the server.		
Phone Number	Phone number	String of up to 128 characters	
FaxT38	T.38 Fax information for devices that support T.38 relay. Applicable only to a VoIP endpoint.		
T38 Support Enable	Enables or disables the use of T.38.	0 - Off 1 - On	
RTP	Voice profile parameters related to the voice stream sent via RTP. Applicable only for a VoIP endpoint.		
DSCP for RTP	The DSCP value for RTP stream	0 - 63	0
SIP	Voice profile parameters that are specific to SIP user agents.		
DSCP for SIP	The DSCP value for SIP signaling	0 - 63	0
Registration Expire Timeout	Registration expiration time in seconds. It is only used when registrar is used. O disables the timeout. This is the expiration specified in the register.	0 - 65535	0
Registration Retry Interval	the retry register interval if proxy is not responding	0 - 65535	0
SIP Outbound Proxy Address	Host name or IP address of the outbound proxy. If a value is specified (not empty), the SIP endpoint sends all SIP traffic requests and responses) to the host indicated by his parameter and the port indicated by the Outbound Proxy Port parameter.	0.0.0.0 - 255.255.255.255	

Table 56: Services (Continued)

Parameter Name	Description	Range	Default
SIP Outbound Proxy Port	Destination port to be used in connecting to the outbound proxy. This parameter is ignored unless the value of the Outbound Proxy arameter is not empty.	0 - 65535	5060
SIP Registrar Address	Host name or IP address of the SIP registrar server.	0.0.0.0 - 255.255.255.255	
SIP Registrar Port	Destination port to be used in connecting to the SIP registrar server.	0 - 65535	5060
SIP Tag Matching Enable	SIP to-tag matching	UDP TCP	

Table 57: LAN Device

Parameter Name	Description	Range	Default
LAN Device			
Lan Device.i			
LAN Ethernet Interface Number Of Entries	Number of instances of LAN Ethernet Interface Config in this LAN Device.		
LAN WLAN Configuration Number of Entries	The number of WiFi ports (wireless LAN)on the LAN side of the CPE		
LAN Ethernet Interface Config.i			
Enable	Enable or disable th LAN interface	0 - Disable 1 - Enable	0 - Disable
LAN Interface	The name of the LAN interface		
MACAddress	The MAC address of the LAN port.		
Status	The status of the LAN port.		

Table 57: LAN Device (Continued)

Parameter Name	Description	Range	Default
Stats			
LAN Received Bytes	Total number of bytes received over the LAN port since the CPE was last reset		
LAN Received Packets	Total number of packets received over the LAN port since the CPE was last reset		
LAN Transmitted Bytes	Total number of bytes transmitted over the LAN port since the CPE was last reset		
LAN Transmitted Packets	Total number of packets transmitted over the LAN port since the CPE was last reset		
WLAN Configuration			
WLAN Configuration.i			
WEPKey			
WEPKey.i			
WEPKey	WEP key used to encrypt the data stream	A sequence of hexadecimal digits,10 characters for 40-bit encryption(64 bits HEX), or 26 characters for 104-bit encryption(128 bits HEX).	

Table 57: LAN Device (Continued)

Parameter Name	Description	Range	Default
WLAN Adapter			
Virtual Interface Config			
Virtual Interface Config.i			
Authentication	Select the type of authentication method in use	open shared radius wpa wpa2 wpa wpa2 psk psk2 psk psk2	open
BSSID	The MAC address of the wireless interface.		
Disable WMM Advertise	Enable of disable WMM advertisement	0 - Disabled 1 - Enabled	0 - Disabled
Hide Access Point	Enables or disables the hide access point	0 - Disabled 1 - Enabled	0 - Disabled
MAC Filter Restrict Mode	Select the MAC address filter.	disabled allow deny	disabled
MAX Clients	The maximum number of clients	0 - 65535 and smaller than Global max clients	16
Network Key Index 128	The index for the 128-bit network key that is selected		
Network Key Index 64	The index for the 64-bit network key that is selected		
Network Re-auth Interval	The interval time for re-authorization		

Table 57: LAN Device (Continued)

Parameter Name	Description	Range	Default
SSID	The current service set identifier in use by the connection. The SSID is an identifier that is attached to packets sent over the wireless LAN that functions as a “password” for joining a particular radio network (BSS).		BrcmAP0
WEP Encryption Enable	Enable or disable WEP encryption	disabled enabled	disabled
WEP Encryption Strength	The WEP encryption strength	0 - 128 bit 1 - 64 bit	0
WPA Encryption	The type of WPA encryption	tkip aes tkip+aes	tkip
WPA Pre-Shared Key	Set the WPA preshared key		1915111326
WPA2 Preauthentication enable	Enable or disable WPA2 Preauthentication	0 - Disabled 1 - Enabled	0
Key128 Configuration			
Key128 Configuration.i			
Network Key128	The 128-bit network key		
Key64 Configuration			
Key64 Configuration.i			
Network Key64	The 64-bit network key		
Static Wds Config			
Static Wds Config.i			
Remote Bridge MAC	The MAC address for the remote bridge that will be granted access while enabling wireless bridge restriction		

Table 57: LAN Device (Continued)

Parameter Name	Description	Range	Default
Base Config			
54g Mode	Select the wireless mode	0 - b mode 1 - auto 4 -performance 5 LRS	1
54g Protection	The 54g mode protection set	auto off	auto
AP Mode	Select the access point mode	ap - access point wds - wireless bridge	ap
Band	The radio band in use	2 - 2.4GHz	2
Basic Rate	The basic rate	default all 12 wifi2 wifi2 for b mode	default
Beacon Interval	The wireless beacon interval time	1 - 65535	100
Bridge Restrict Enable	The bridge restric function	0 - Enabled 1- Disabled 2 - Enabled Scan	0
Channel	The wireless channel	0 to 14 (14 for JP)	0
Country	Execution standard based on country		
Enable	Enable or disable wireless function	0 - Disabled 1- Enabled	
Fragmentation Threshold	Set the fragmentation threshold for optimal use of the bandwidth.	256 - 2346	2346
Max Clients	The maximum number of global clients	1 - 129	16

Table 57: LAN Device (Continued)

Parameter Name	Description	Range	Default
Multicast Rate	Select the multicast rate	auto 0 1000000 2000000 5500000 6000000 9000000 11000000 12000000 18000000 24000000 36000000 48000000 54000000	0
Rate	The speed rate in 54g mode	auto 0 1000000 2000000 5500000 6000000 9000000 11000000 12000000 18000000 24000000 36000000 48000000 54000000	0

Table 57: LAN Device (Continued)

Parameter Name	Description	Range	Default
RTS Threshold	Sets the packet size threshold at which a Request to Send (RTS) signal must be sent to a receiving station prior to the sending the data frame.	0 - 2347	2347
Transmit Power	The current transmit power [dbm] of the CPE	0 - 100	100
Wireless Driver Version	The version of the wireless firmware		
WMM APSD Enable	Enable or disable WNN Automatic Power Save Delivery (APSD)	0 - Disabled 1- Enabled	0
WMM Enable	Enable WMM power save	1 - Auto 0 - Disabled 1 - Enabled	1
WMM No Acknowlegment Enable	Enable or disable WMM no-acknowledgement. Enabling no-acknowledgemnt can result in more efficient throughput, but higher error rates in a noisy Radio Frequency (RF) environment	0 - Disabled 1 -Enabled	0
Hosts			
Number of Hosts	Number of hosts		
Host.i			
Expires In:	The time that the current entry will expire		
Hostname	The hostname of assigned target devices		
HW Address	The assigned hardware address		
IP Address	The assigned IP address		

Table 57: LAN Device (Continued)

Parameter Name	Description	Range	Default
LAN Host Config Management			
DHCP Leased Time	Specifies the lease time (in seconds) of the client assigned to the address	0 - 65535	24
DHCP Server Enable	The DHCP server is enabled/disabled at the CPE	0 - Disabled 1 - Enabled	1
DHCP Server End IP Address	The assigned end IP address	0.0.0.0 - 255.255.255.255	192.168.1.254
DHCP Server Start IP Address	The assigned start IP address	0.0.0.0 - 255.255.255.255	192.168.1.1
Subnet Mask	The subnet mask for this group		255.255.255.0
IP Interface			
IP Interface.i			
Firewall Enable	Enable a firewall on the IP interface	0 - Disabled 1 - Enabled	1
IP Addressing Method	IP addressing method	Static DHCP	
LAN IP Address	Default LAN bridge IP address		
Subnet Mask	The subnet mask for this group		
IP Filter Configuration			
Firewall Exception			
DHCP Conditional Serving Pool			
LAN Device.i			
LAN Ethernet Interface Number Of Entries	Number of instances of LAN Ethernet Interface Config in this LAN Device.		
LAN WLAN Configuration Number Of Entries	The number of WiFi ports (wireless LAN)on the LAN side of the CPE		

Table 57: LAN Device (Continued)

Parameter Name	Description	Range	Default
LAN Ethernet Interface Config			
WLAN Config			
Hosts			
Number of Hosts	Number of hosts		
LAN Host Config Management			
DHCP Leased Time	Specifies the lease time (in seconds) of the client assigned to the address	0 - 65535	24
DHCP Server Enable	The DHCP server is enabled/disabled at the CPE	0 - Disabled 1 - Enabled	1
DHCP Server End IP Address	The assigned end IP address	0.0.0.0 - 255.255.255.255	192.168.1.254
DHCP Server Start IP Address	The assigned start IP address	0.0.0.0 - 255.255.255.255	192.168.1.1
Subnet Mask	The subnet mask for this group		255.255.255.0
IP Interface			
IP Interface.i			
Firewall Enable	Enable a firewall on the IP interface	0 - Disabled 1 - Enabled	
IP Addressing Method	IP addressing method	Static DHCP	
LAN IP Address	Default LAN bridge IP address		
Subnet Mask	The subnet mask for this group		
IP Filter Configuration			
Firewall Exception			
DHCP Conditional Serving Pool			

Table 58: Time

Parameter Name	Description	Range	Default
CPE Time Zone	The local time offset from UTC and name of the local time zone in the form: (GMT+hh:mm) LocalTimeZoneName	String of up to 128 characters	
CPE Time Zone Name	The local time offset from UTC and name of the local time zone in the form: (GMT+hh:mm) LocalTimeZoneName		
First NTP TIme Server	First NTP timeserver. Either a host name or IP address.		
Second NTP Time Server	Second NTP timeserver. Either a host name or IP address.		
Third NTP Time Server	Third NTP timeserver. Either a host name or IP address.		
Fourth NTP Time Server	Fourth NTP timeserver. Either a host name or IP address.		
Fifth NTP Time Server	Fifth NTP timeserver. Either a host name or IP address.		
SNTP Enable	Enable or disable	0 - Disabled 1 - Enabled	0

Table 59: WAN Device

Parameter Name	Description	Range	Default
WAN Device			
WAN Device.i			
WAN Connection Number Of Entries	Number of instances of WANConnectionDevice in this WANDevice.		

Table 59: WAN Device (Continued)

Parameter Name	Description	Range	Default
WAN Connection Device			
WAN Connection Device.i			
No. of IP Connections	Defines the number of IP connections		
WAN IP Connection			
WAN IP Connection.i			
802.1P Priority	VLAN priority field on this Wan Port	-1 to 7	0
Addressing Type	The parameter is used to assign an address to the WAN side interface of the CPE for this connection.	DHCP Static	
Connection Status	WAN connection status		
Default Gateway	Default Gateway interface name		
DSCP Mark	Diffserv code point used for outgoing management flow packets	0 - 63	0
IPoE Option 12 Host Name	DHCP client Option, 12 host name		
IPoE Option 125 Enable	Enable IPoE Option 125	0 - Disabled 1 - Enabled	0
IPoE Option 60 Vendor ID	DHCP client Option 60 Vendor ID Strin		
IPoE Option 61 DUID	DHCP client Option 61 Identity Association ID		
IPoE Option 61 IAID	DHCP client Option 61 DHCP Unique Identifier		
MAC Address	The physical address of the interface		
Port Mapping Number Of Entries	Total number of Port Mapping entries		
Subnet Mask	The subnet mask for this group		

Table 59: WAN Device (Continued)

Parameter Name	Description	Range	Default
Supported Connection Types	List of supported connection types	Unconfigured IP_Routed IP_Bridged	
VLAN Enable/VLAN ID	VLAN feature and ID on this port	0 - Disabled 1 - Enabled -1 to 4094	
WAN Connection Type	The type of WAN connection	Unconfigured IP_Routed IP_Bridged	
WAN Description	The WAN connection name and description		
WAN Firewall Enable	Enable or disable the firewall on the WAN port	0 - Disabled 1 - Enabled	
WAN Interface	WAN interface name		
WAN /IPoE IP Address	The IP address for the WAN connection		
WAN/IPoE NAT Enable	Enable or disable WAN/IPoE NAT (Network Address Tranport)	0 - Disabled 1 - Enabled	
Port Mapping			
Firewall Exception			
Stats			
Ethernet Bytes Received	The total number of Ethernet bytes received		
Ethernet Bytes Sent	The total number of Ethernet bytes sent		
Ethernet Packets Received	The total number of Ethernet packets received		
Ethernet Packets Sent	The total number of Ethernet packets sent		
WAN PPP Connection			

Table 60: Layer 3

Parameter Name	Description	Range	Default
Layer3 Forwarding			
Default GateWay	Default gateway interface		
Number of Records	Number of records		
Forwarding			
Forwarding.15.			
Enable	Enable or diable the Route	0 - Disabled 1 - Enabled	1
Policy Routing Gateway	Default Gateway IP Address for this Policy Routing		
Policy Routing Interface	Routing interface for this Policy Routing		
Policy Routing Name	Name for this Policy Routing		
Policy Routing Source IP Address	Source IP address for this Policy Routing		
Source Subnet Mask	Source Subnet mask		

Table 61: Broadcom Specific

Parameter Name	Description	Range	Default
Login Config			
Adminstrator Name	The user name of the adminstrator		admin
Adminstrator Password	The adminstrator's password		
Support Name	The user name for connection from the WAN side		support
Support Password	The password for connection fro mthe WAN side		
User Password	The password for user		
Username	The username fort he user		user

Table 61: Broadcom Specific (Continued)

Parameter Name	Description	Range	Default
Network Config			
Primary, Secondary DNS	Primary/Secondary DNS Server IP address		
Sec Dmz Host Config			
DMZ IP Address	DMZ IP address. (DMZ is a firewall configuration for securing LANs)		
SNMP Config			
Read Community	The read-only community string of SNMP		public
Set Community	Set the SNMP community		private
System Contact	Describes who should be contactd about the host the agent is running on		unknow
System Location	Describes the location of the system		unknow
System Name	The system name		Broadcom
Trap Manager IO	The IP address of the Trap service	0.0.0.0 - 255.255.255.255	0.0.0.0
Sec Dmz Host Config			
Display Level	System log display level	Emergency Alert Critical Error Warning Notice Informational Debug	
IP Address	System log server IP address	0.0.0.0 - 255.255.255.255	0.0.0.0

Table 61: Broadcom Specific (Continued)

Parameter Name	Description	Range	Default
Local Log Level	The level of the log reserved in the local device	Emergency Alert Critical Error Warning Notice Informational Debug	
Log Enable	Enable or disable system log	Disabled Enabled	Disabled
Log Mode	System log mode	local buffer remote both	local buffer
Remote Log Level	The level of the log reserved in the remote device	Emergency Alert Critical Error Warning Notice Informational Debug	
Server Port Number	System log server port	0 - 65535	514
App Config			
TR69 Cfg			
Connection Request Authentication	Enable or disable Connection Request Authentication	0 - Disabled 1 - Enabled	1
Display SOAP Message Enabled	Display SOAP Message	0 - Disabled 1 - Enabled	1

14.6.3 Inform Parameters

Table 62: Inform Parameters

Parameter	Value
Manufacturer	InternetGatewayDevice.DeviceInfo.Manufacturer
Manufacturer OUI	InternetGatewayDevice.DeviceInfo.ManufacturerOUI
Model Name	InternetGatewayDevice.DeviceInfo.ProductClass
Serial Number	InternetGatewayDevice.DeviceInfo.SerialNumber
Spec Version	InternetGatewayDevice.DeviceInfo.SpecVersion
HW Version	InternetGatewayDevice.DeviceInfo.HardwareVersion
Software Version	InternetGatewayDevice.DeviceInfo.SoftwareVersion
Provisioning Code	InternetGatewayDevice.DeviceInfo.ProvisioningCode
Con Req URL	InternetGatewayDevice.ManagementServer.ConnectionRequestURL
Parameter Key	InternetGatewayDevice.ManagementServer.ParameterKey
CPE Serial Number	InternetGatewayDevice.ManagementServer.CPESerialNumber
IP Address	InternetGatewayDevice.WANDevice.1.WANConnectionDevice.1.WANIPConnection.1.ExternalIPAddress

Glossary

ACS
Auto-Configuration Server. This is a component in the broadband network responsible for auto-configuration of the CPE for advanced services.

ACS Discovery
A process by which the CPE locates the correct ACS URL. There are two methods:

1 The ACS URL is pre-set in the CPE.

2 As part of the IP layer auto-configuration, a DHCP server on the access network may be configured to include the ACS URL as a DHCP option [12].

API
Application Programming Interface – An exposed set of methods for integration, allowing access to ACSsupported functionality to external applications (e.g., OSS). In the ACS realm, this interface is aliased NB (northbound).

ATPC
Adaptive Transmission Power Control

CINR
Carrier to Interference-plus-Noise Ratio expressed in decibels (dBs)

CPE
Customer Premises Equipment (e.g., Internet gateway,routers, modems, multiplexers, etc). This is a communication device located at a subscriber's premises through which end user(s) gain(s) connection toward core network.

CPE Profile
A collection of Objects (common settings) for a specific CPE model type.

CPE Update
A process by which the ACS updates the CPE with a new / changed CPE profile.

Default Profile (see also Unknown CPE)
A CPE profile intended for all "Unknown CPEs".

Device Identity
A three-tuple that uniquely identifies a Device, which includes the manufacturer’s OUI, serial number, and (optionally) product class.

DHCP
Dynamic Host Configuration Protocol – A network protocol that automates the assignment of Internet Protocol (IP) addresses in any given IP network.

DHCP Server
A DHCP server's main functionality (among others) is to allocate an IP address to each device that requests its service, and ensures that all IP addresses are unique. In the ACS realm, some DHCP servers are also able to supply the ACS URL to the CPE for the "ACS discovery" process (see ACS Discovery).

DSCP
Differentiated Services Code Point – a field in the Internet Protocol (IP) header that specifies the per hop behavior for a given flow of packets

EAP
Extensible Authentication Protocol – a protocol for wireless networks that expands on authentication methods used by the Point-to-Point Protocol (PPP).

FEC
Forward error correction – a method of obtaining error control in data transmission in which the source (transmitter) sends redundant data and the destination (receiver) recognizes only the portion of the data that contains no apparent errors.

Gateway
Internet Gateway Device as defined in TR-069 [1-2].

Gateway Identity
A three-tuple that uniquely identifies a Gateway, which includes the manufacturer’s OUI, serial number, and (optionally) product class.

Inform	A procedure by which the CPE contacts the ACS (interval based in CPE or initiated by ACS) to send its parameters. The entire data model is sent on first-time connection; subsequent Inform connections will contain only a select group of Objects (see TR specs).
Individual Parameters	Parameter values that are unique to a specific CPE (e.g., PPP credentials, specific SIP credentials, etc.).
Kick Device	The ACS at any time requests that the CPE initiate a connection to the ACS using the Connection Request notification mechanism. Support for this mechanism is required in a CPE, and is recommended in an ACS.
Kick URL	Present only for a CPE that supports the Kicked RPC method. A LAN-accessible URL from which the CPE can be “kicked” to initiate the Kicked RPC method call. MUST be an absolute URL including a host name or IP address, as would be used on the LAN side of the CPE.
LAN Device	A device which is located "behind" a Gateway / NAT, and supports TR-111, and is thus manageable by the ACS.
Object	A collection of Parameters and/or other objects.
Parameter (see also Object)	A name-value pair representing a manageable CPE parameter made accessible to an ACS for reading and/or writing.
RPC	Remote Procedure Call – A list of available methods on the CPE for facilitating the bidirectional communication between the CPE and ACS.
RSSI	Received Signal Strength Indicator – A signal or circuit that indicates the strength of the incoming (received) signal in a receiver.
Session	A contiguous sequence of transactions between a CPE and an ACS. A session is always initiated by the CPE. The ACS may request a session via "Kick device" method; however, the CPE will commence the actual session.
SOAP	Simple Object Access Protocol – Protocol used for passing data between the ACS and CPE.
SNR	Signal to Noise Ratio – The ratio of the amplitude of a desired analog or digital data signal to the amplitude of noise in a transmission channel at a specific point in time. SNR is typically expressed logarithmically in decibels (dB). SNR measures the quality of a transmission channel or a signal over a network channel. The greater the ratio, the easier it is to identify and subsequently isolate and eliminate the effects of noise.SNR also is abbreviated as S/N.
TR-nnn Protocol	TR-069 is a DSL Forum "CPE WAN Management Protocol" intended for communication between a CPE and Auto-Configuration Server (ACS). TR-069 aggregates a list of sub-protocols, each with its own purpose (e.g., TR-098 for QOS, TR-114 for VoIP, TR- 111 for LAN side devices, etc.).
Unknown CPE	A CPE that has connected to the ACS, but the ACS does not have a specific profile for it.